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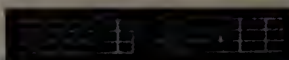
Special Issue

PC WORLD

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of PC Products and Solutions*



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pfs: Professional Plan

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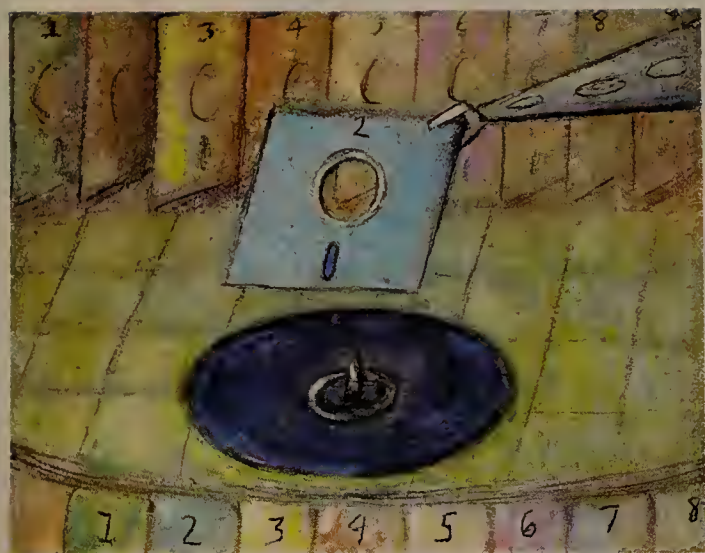
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The Business Magazine of PC Products and Solutions
July 1987



■ Special Report: IBM's Personal Systems/2

166 Extending the Blue Horizon, *Eric Bender*
IBM hopes to regain the driver's seat with Personal Systems—but who will get on the bus?

178 Gates on Systems/2
Microsoft Chairman Bill Gates explains the impact of IBM's new product line.

1987 Software Update

203 *PC World* picks the hits from this season's software lineup.

■ Communications

- 205 **Shortcut to Data Sharing, *Richard Landry*** The one-of-a-kind *Express* from Lotus makes electronic mail a snap to use.
- 208 **Smartcom: A Standard Lumbers Forward, *Daniel J. Rosenbaum*** Hayes Microcomputer's *Smartcom* builds slowly on a strong foundation.
- 210 **Talk Isn't Free (Any More), *Judy Getts*** Headlands Communications' *PC-Talk4* stumbles into shrink-wrap.
- 212 **Transcendental Mediation, *Jim Heid*** Centram's *TOPS* hybrid network lets PCs and Macintoshes work together.
- 215 **A Little Knowledge . . . , *John Edwards*** Application Knowledge Groups' network offers simple, practical service.

■ Word Processing

- 219 **Almost Perfect, *Jordan J. Breslow*** With a host of upgrades, WordPerfect makes a good program even better.
- 222 **The Latest Word, *Eric Alderman*** Word 3.1 goes for quality, not quantity. A thesaurus and EGA compatibility top the list.
- 224 **Just Tough Enough, *John Sladek*** XyWrite III's latest version is easier to use but still fast and flexible.
- 226 **DisplayWrite Keeps Trying, *Ruth Halpern*** DisplayWrite users will welcome DisplayWrite 4, but they're the only ones who will.

■ Publishing

- 229 **Ivy League Publishing, *Richard Jantz*** The *pfs* makers go big league with *Harvard Professional Publisher*—but score only a minor victory.

■ Data Management

- 237 **A Pretty Paradox, *William Urschel*** A new application generator and better forms handling shuff up this relational powerhouse.
- 241 **Snappy Answers, *Jeff Walden*** Improved response time makes the *Intelligent Assistant* a serious query tool, not just a beginner's crutch.
- 243 **pfs:file Goes Pro, *Richard H. Baker*** Snazzy graphics and trademark ease of use mark this hybrid of *pfs:file* and *pfs:report*.
- 245 **Garbage In, Structure Out, *George R. Beinhorn and Marlene Nesary*** *askSam* waives field designations on incoming data yet provides many ways of structuring output.

■ Spreadsheets

- 249 Professional Planning Power, *John Walkenbach* A dynamic interface and superb flexibility distinguish *pfs:professional plan*.
- 253 Souped-Up SuperCalc, *Scott Palmer* SuperCalc 4 still delivers great graphics (and more) after all these years.
- 256 Smooth as ... 1-2-3?, *Jeff Kahn* Daybreak Technologies' *Silk* wears its impressive wardrobe of features well.
- 258 Perfection According to Plan?, *Stephen A. Blumenthal* WordPerfect's *PlanPerfect* is feature-rich but speed-poor—and no picnic to learn.
- 261 Figuratively Speaking, *Tom Badgett* Matrix meets text mode in Lifetree's *Words & Figures*—and both live happily ever after.

■ Graphics

- 265 Freelance Makes the Charts, *Eric Knorr* Lotus's *Freelance Plus* adds simple charting to an admirable chart-editing package.
- 268 The Publisher's Companion, *Richard Jantz* Manipulate a full page of 300-dpi graphics with Z-Soft's *Publisher's Paintbrush*.
- 270 Catch as CAD Can, *Steven Lord* Autodesk's *AutoSketch* squares off against Generic Software's *Generic CADD*.
- 273 Charting Alternatives, *TJ Byers* A sleeper charting package, Enertronic's *EnerGraphics* does it all.

■ Finance

- 279 Making Money Manageable, *Leslie Lauderdale* With the new, improved version of *Managing Your Money*, on-line banking is a breeze.
- 282 Small Change Adds Up, *Jeffrey Angus* If you're tired of balancing your checkbook by hand, let *Quicken* do it.
- 284 Trading Among Equals, *James Buttonwood* Charles Schwab's *The Equalizer* lets you play the market at all hours of the day or night.
- 286 Turbo Tax: Many Happy Returns, *Charles Rundgren* Why slave over your taxes? *Turbo Tax* can relieve you of some of the tedium.

■ Application Development

- 289 The Language That Wasn't There, *Tom Swan* Aker's *Magic PC* makes the drudgery of programming disappear.

■ Utilities

- 293 A Key to Powerful Macros, *John Walkenbach* *Keyworks*, Alpha Software's popular macro generator, gains new talents.
- 295 The Forest Through the XTrees, *Donald B. Trivette* The reigning king of hard disk managers is facing some ambitious rivals.
- 297 The Calm After the Storm, *Patrick Marshall* *Tornado Notes* efficiently organizes those vital scraps of paper on your desk.
- 299 Homebase—There's No Place Like It, *Ken Smith* This surprisingly efficient desktop organizer comes in plain brown wrapping.
- 301 Printing with Pizazz, *Ross Smith* Linking screen and printer, *Pizazz* adds rainbow color to the printed page.

Departments

- 15 David Bunnell
- 35 Letters
- 57 Harry Miller
- 68 PC World View, *Edited by Eric Bender*
- 79 Product Outlook, *Ken Greenberg*
- 133 From the Hardware Shelf, *Edited by Eric Knorr*
- 305 The Upgrade Path, *Robert Luhn*
- 316 Consumer Watch, *Anita Amirrezvani*
- 335 The Help Screen, *Karl Koessel*
- 341 *.* , *Edited by Mike Cushman*

PC World Computer Products Shopping Guide

- 322 A convenient buying guide

Indexes

- 356 Products featured in this issue
- 357 Advertisers

PC World Directory

- 360 A classified guide to products and services

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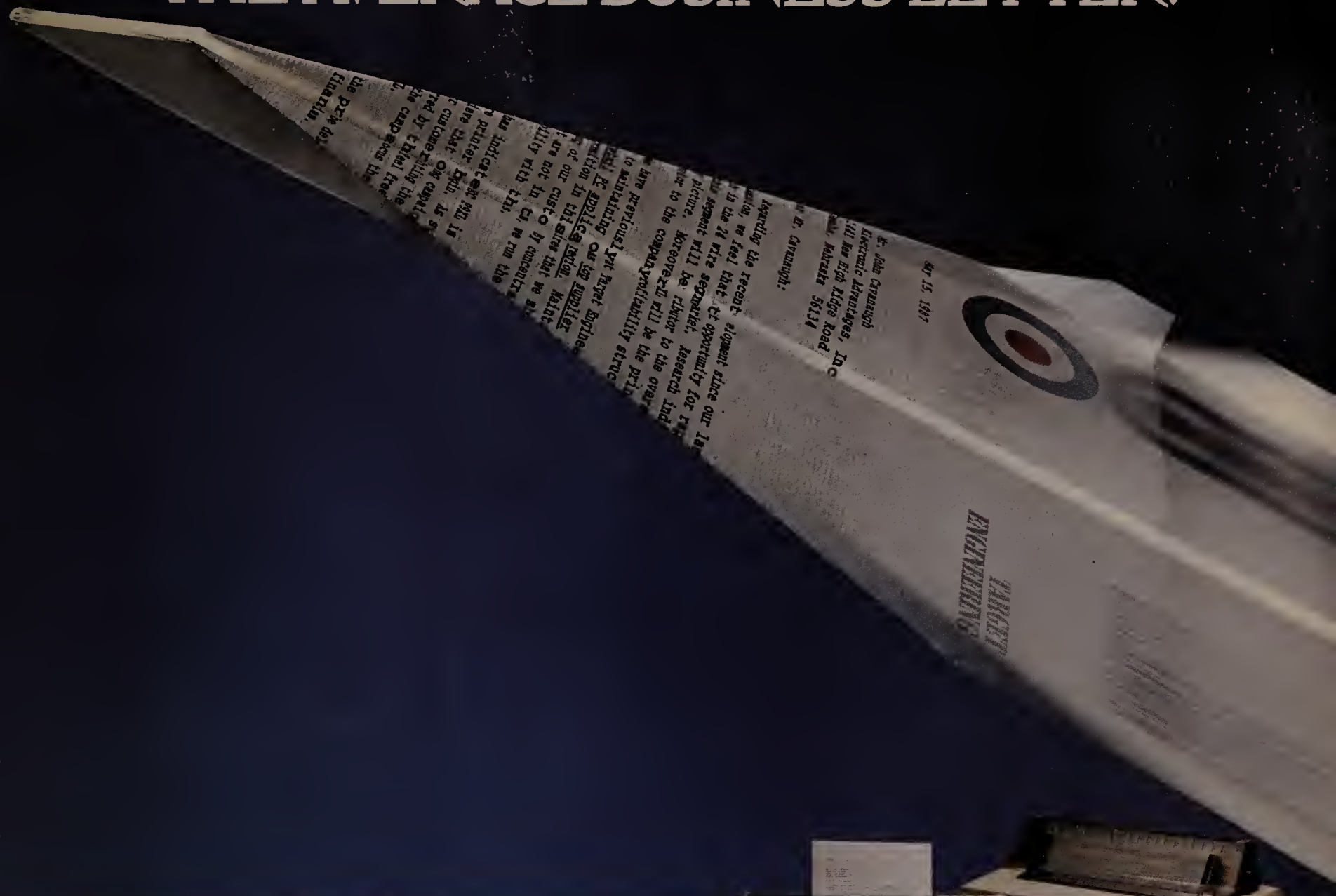
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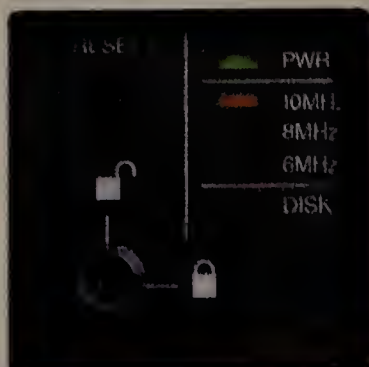
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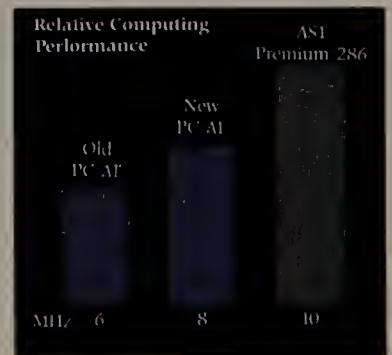
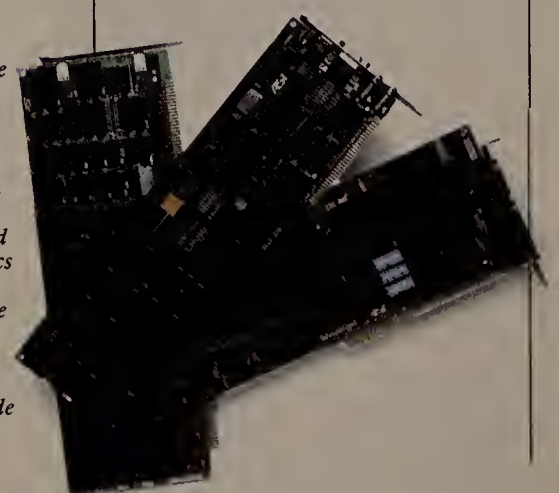
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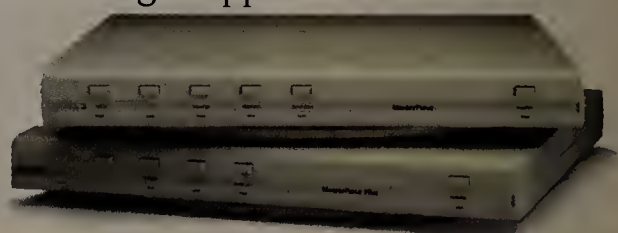
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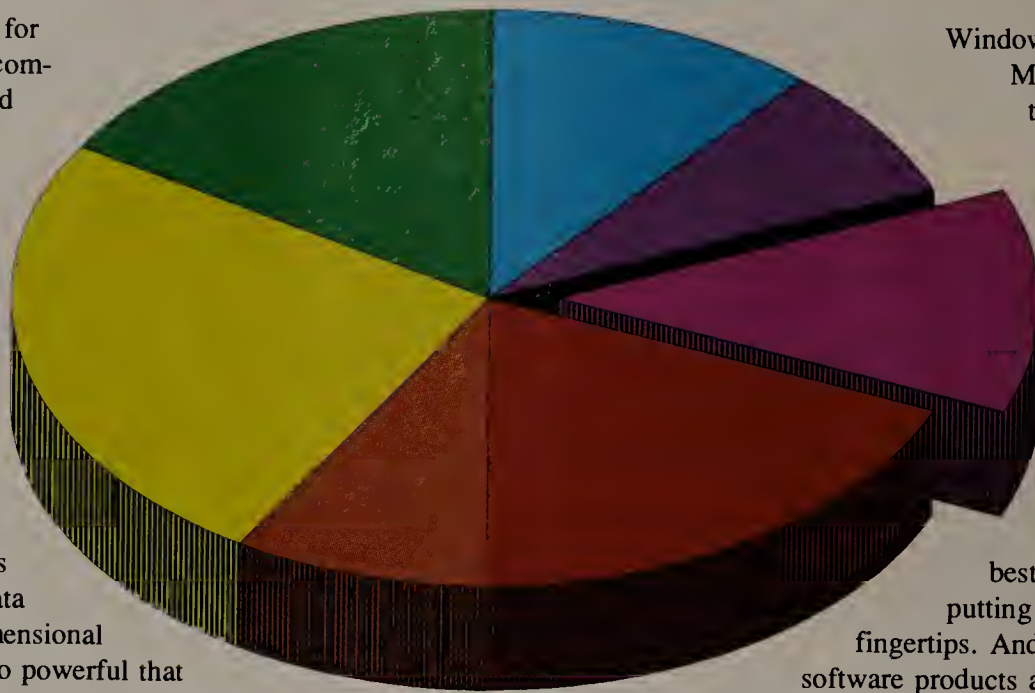
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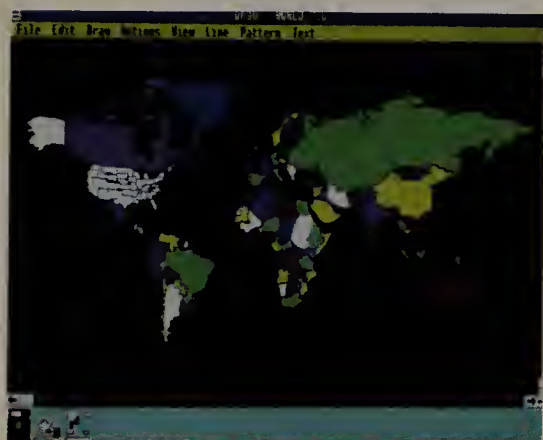
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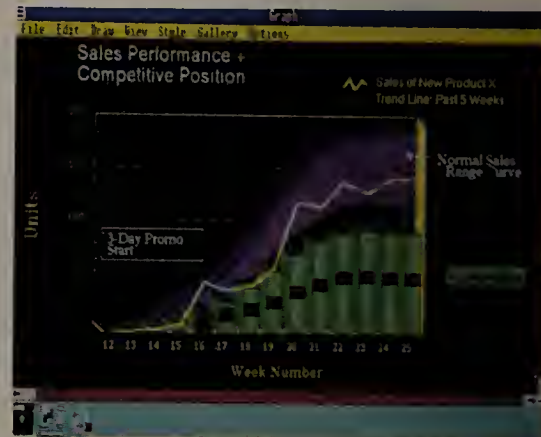
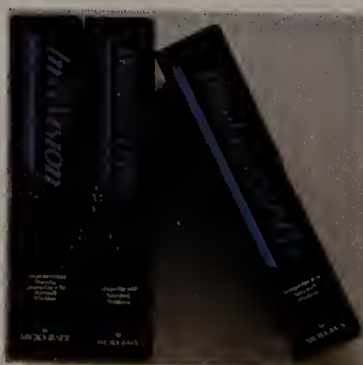
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Waiting for OS/2



David Bunnell

Remember when the world of PCs was divided into software fiefdoms? Now the boundary lines are beginning to blur as the knights in shining software compete on each other's turf. The prize? The Holy Grail of OS/2. The challenge? Staying alive.

In one way, waiting for OS/2, IBM's operating system for its new generation of Personal System 2 computers, is like waiting for Godot. You don't know for certain when it's going to appear. You only know that it's supposed to be on its way. All you can do is bide your time, wait, and speculate.

In the meantime the specter of OS/2 haunts software developers, even before the system arrives on the scene. This poltergeist is already wreaking havoc in the established order of software companies. As a result, a new balance of power seems to be in the offing.

In fact, I haven't seen so much indecisiveness and uncertainty among software developers since the great CP/M-MS-DOS schism back in the early eighties.

The major uncertainty, of course, is how OS/2 will turn out. What is the soul of this new machine going to be like? What will its future software applications be like?

Consider OS/2's purported multitasking capabilities. It offers multitasking only for new programs, not for old ones. So multi-

tasking applications will have to be specially created to take advantage of OS/2.

Another aspect of OS/2 is that it requires a great deal of memory and disk overhead to run. Actually, this operating system may never prove to be all that satisfactory on the 286 machines. DOS 3.30 combined with *Windows 2.0* will remain a credible alternative to OS/2 for a long time to come. I don't think there is any danger that the DOS-*Windows* one-two punch will be overwhelmed by OS/2 right away.

Another operating system has been developed for the 386 machine—Software Link's PC-MOS 386, which lets you run all the old DOS programs concurrently. Rumor has it that Borland is somehow backing Software Link. Borland president Philippe Kahn has been quite vocal in attacking both OS/2 and *Microsoft Windows*, suggesting that neither provides effective solutions for the 386's operating environment.

(continues)

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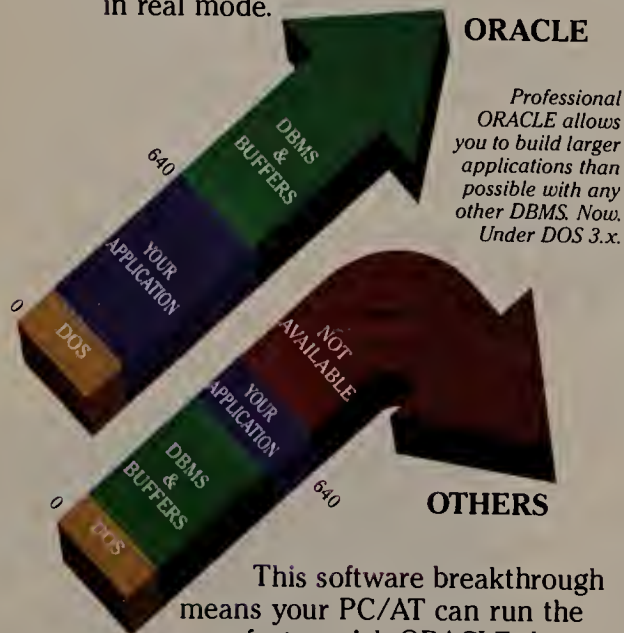
All PC DBMSs have three serious limitations. First, very little room is left for your application after deducting the size of DOS and the DBMS from the available 640K. Second, they don't provide easy, transparent access to minicomputer and mainframe data. Finally, multi-user applications are impractical because of long delays caused by LAN data lock-out. Three serious limitations. Not any more.

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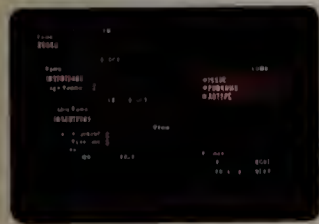
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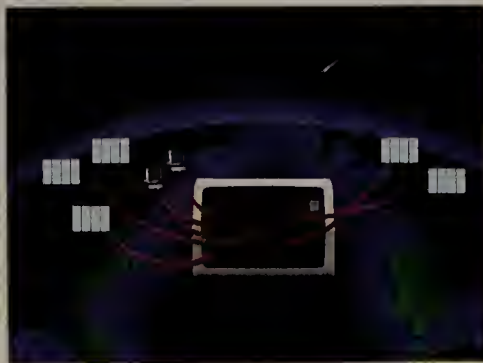
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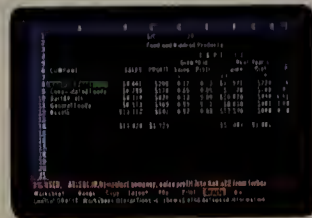
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† DB2 connectivity and LANserver ORACLE for PCs available Q4 1987.

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The question is whether it's really possible to develop an operating system for the 386 machine that is not endorsed by either IBM or any of the other large hardware manufacturers. Could such an operating system make it on its own? It would probably need the support of a major company like Compaq to penetrate the market in a significant way.

I believe that this kind of interdependence—this inability to go it alone—is partly what is responsible for the unsettled feeling, the MS-DOS malaise, that exists in the software world today. We seem to be locked into set patterns of market behavior.

OS/2 aside—it might be a long wait, after all—what are some of the major software trends defining the market today?

Windows emerges as a big winner. It's clear now that the graphics interface is going to be the way people will do their computing—in fact it's the only real game in town—because it addresses the problem of creating graphics software on the PC.

Naturally, some major companies are reluctant to develop software for *Windows* because they don't want to help Microsoft create yet another standard and thereby strengthen its position in the marketplace. However, a number of smaller companies are rushing in to develop *Windows* ap-

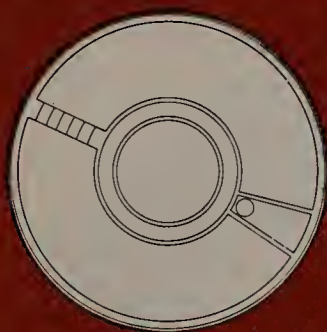
plications, hoping to gain a competitive edge.

When the small guys finally carve out some of that market share for themselves, you can bet that the bigger companies will start to move in, too. So *Windows* is a winner practically any way you look at it.

It's interesting to note that the competition between the large software companies is beginning to heat up. Lotus now publicly admits that it's competing with Ashton-Tate and Microsoft. Two years ago it was a different story. Remember when the market was divided up into software fiefdoms?

(continues)

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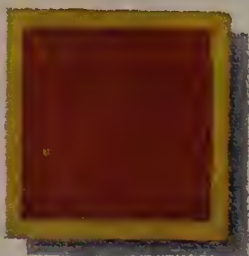
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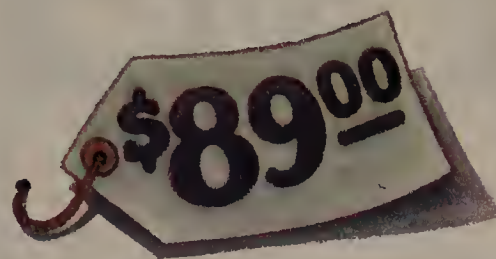
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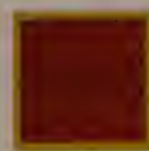
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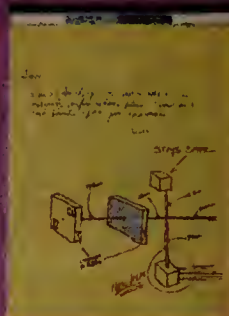
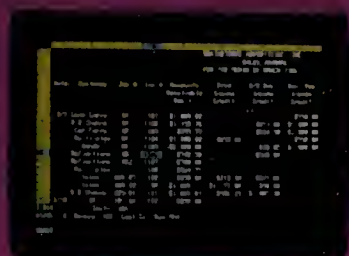
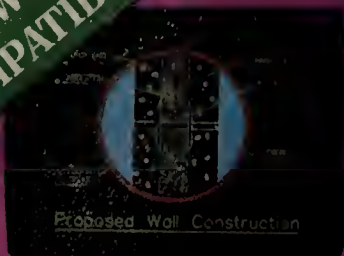
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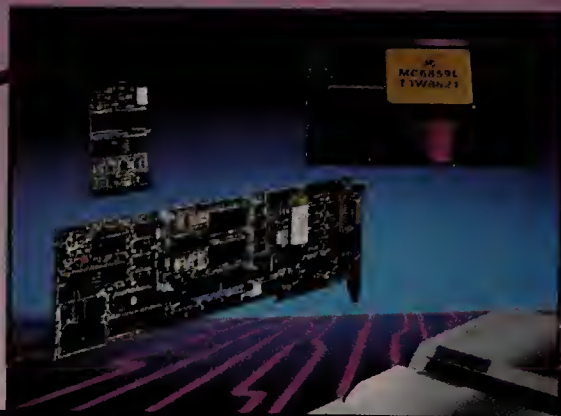
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Lotus was lord of the spreadsheet, Microsoft ruled the realm of operating systems, Ashton-Tate dominated data bases, and word processing belonged to MicroPro.

Those boundary lines between the various domains are now beginning to blur as the knights in shining software compete on each other's turf.

Recently, Lotus and IBM announced that they're working together on producing spreadsheets for mainframes. As part of that arrangement, Lotus may develop data base programs for 286 and 386 machines as well as network-based data base programs for mainframes. So it appears that Lotus is preparing to joust with Ashton-Tate for the data base trophy.

Meanwhile, Microsoft is rumored to be working on a secret, high-powered data base product. And you can bet that Ashton-Tate isn't sitting on the sidelines—it must have some strategies of its own to unfurl on the field. Microsoft is also reportedly developing *Excel* to run under *Windows*, which would compete with Lotus's 1-2-3.

So it looks like the big guys are going to try to trample each other in the coming software tournament.

As a result of all this activity, the 386 machine will come to be accepted at a faster clip than most people expect. Why? The simple fact is that the added speed of the 386 makes all DOS programs better. Put almost any old DOS package on the 386, and it's a screamer.

(continues)

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Although there isn't any real 386 software available yet—which is why you're not going to find any 386 software in this special *PC World* issue on software hits—I think that 386 machines will soon be selling briskly. This will mean that software will be coming out at a pretty fast rate, too. Despite conventional wisdom, I predict that by the end of the year we should start to see some significant 386 software that runs under DOS 3.30 but takes advantage of the 386 chip's talent for multitasking and addressing a large amount of memory.

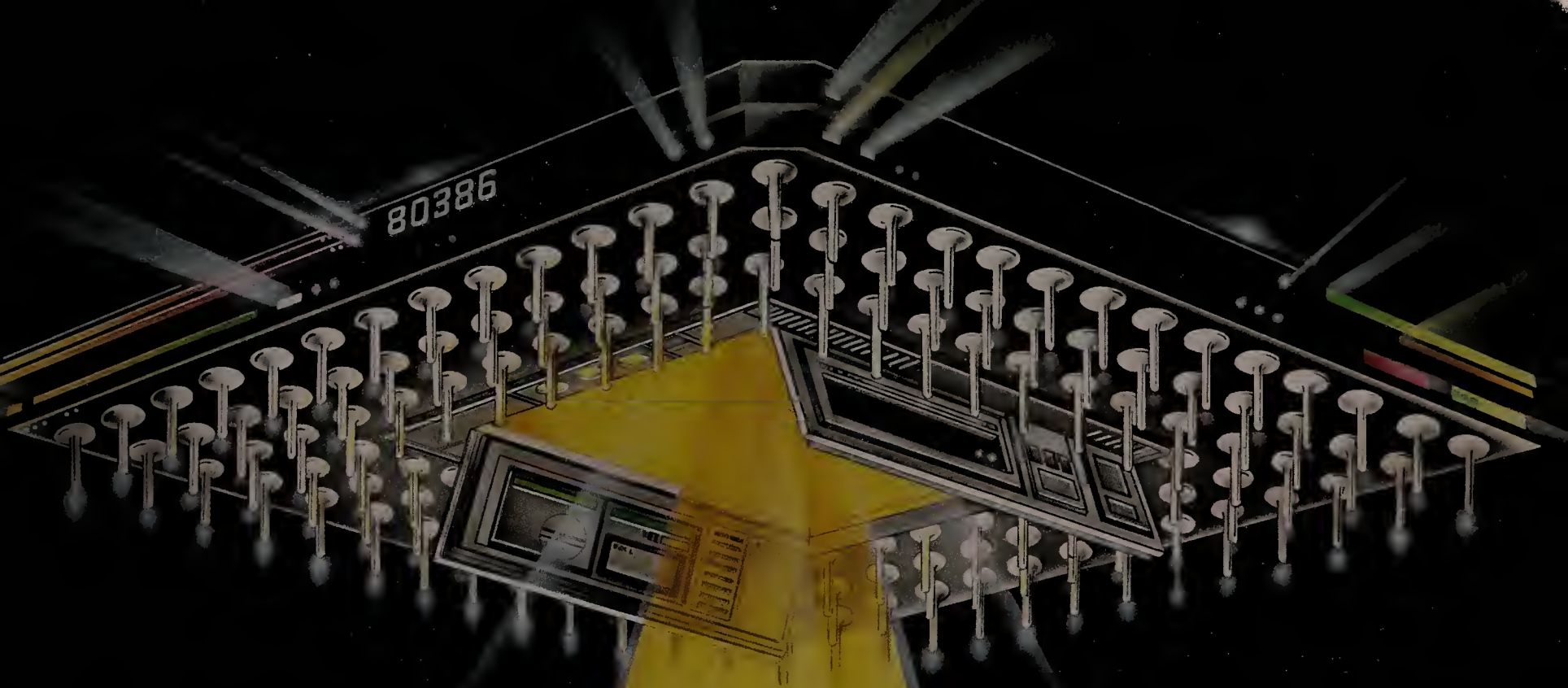
Until then, the vacuum in 386 software will give software companies the rare opportunity to reposition themselves in the marketplace. As in days of yore, small companies will be able to take a stab at the big time. And bigger companies like Lotus will have a chance to become major players in markets that they haven't penetrated before.

Another area of turmoil in the software business lies in the work-alike segment of the market. A great deal of paranoia exists in the work-alike world. There certainly wouldn't be any Lotus "look and feel" lawsuits or other software litigation if work-alike software didn't threaten existing software's market share.

I believe that low-cost work-alike software will continue to plague the larger software companies. Those bloody skirmishes and raids will keep occurring.

The major companies—especially Microsoft, Lotus, and Ashton-Tate—also share another problem that threatens to knock them

(continues)



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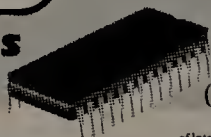
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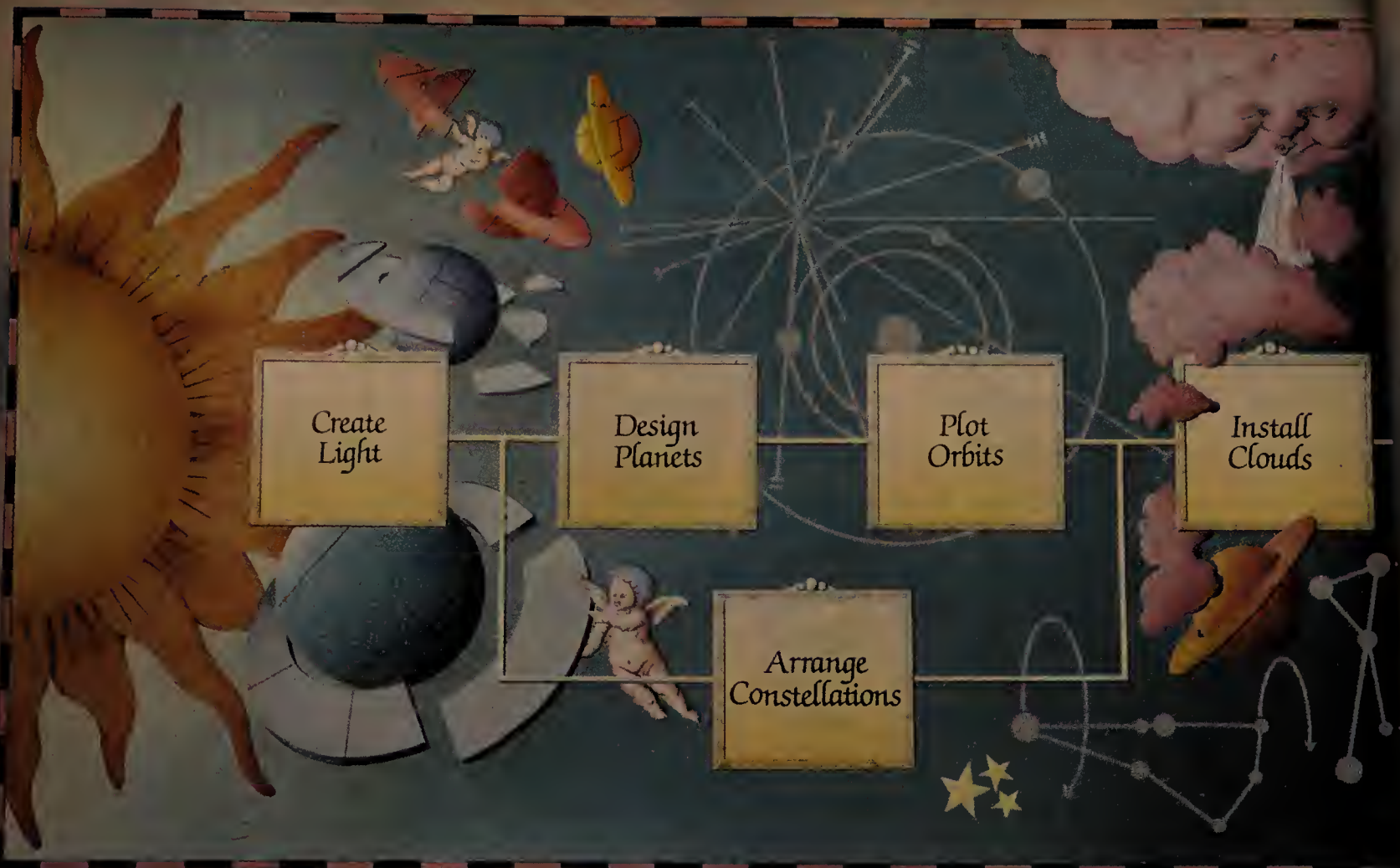
out of the saddle: These firms have become the darlings of Wall Street, and their stocks are grossly overvalued.

As microcomputer software has gained more and more prominence in the business world, PC software companies have overtaken minicomputer and mainframe software companies in terms of market clout. With their highly inflated stock prices (and our inflated expectations of what the companies can do), it's likely that we'll see of some of these stocks tumble. There is no way they can continue to fulfill Wall Street's high expectations in the volatile software market I have just described.

On the positive side, the coming generation of 386 software applications will dramatically expand the power of the PC— particularly its ability to perform in work-group environments. The new work-group configurations, with shared data bases and shared spreadsheets and shared systems of passing text and images from writers to editors, will decisively propel the PC as it eats into the minicomputer market. We will begin to see unmistakable signs of this by the end of the year.

Meanwhile, as this special software issue of *PC World* demonstrates, there's no software like the present. Lots of great packages are available right now.

Which leads me to think, what the heck, Godot can take his time! ●



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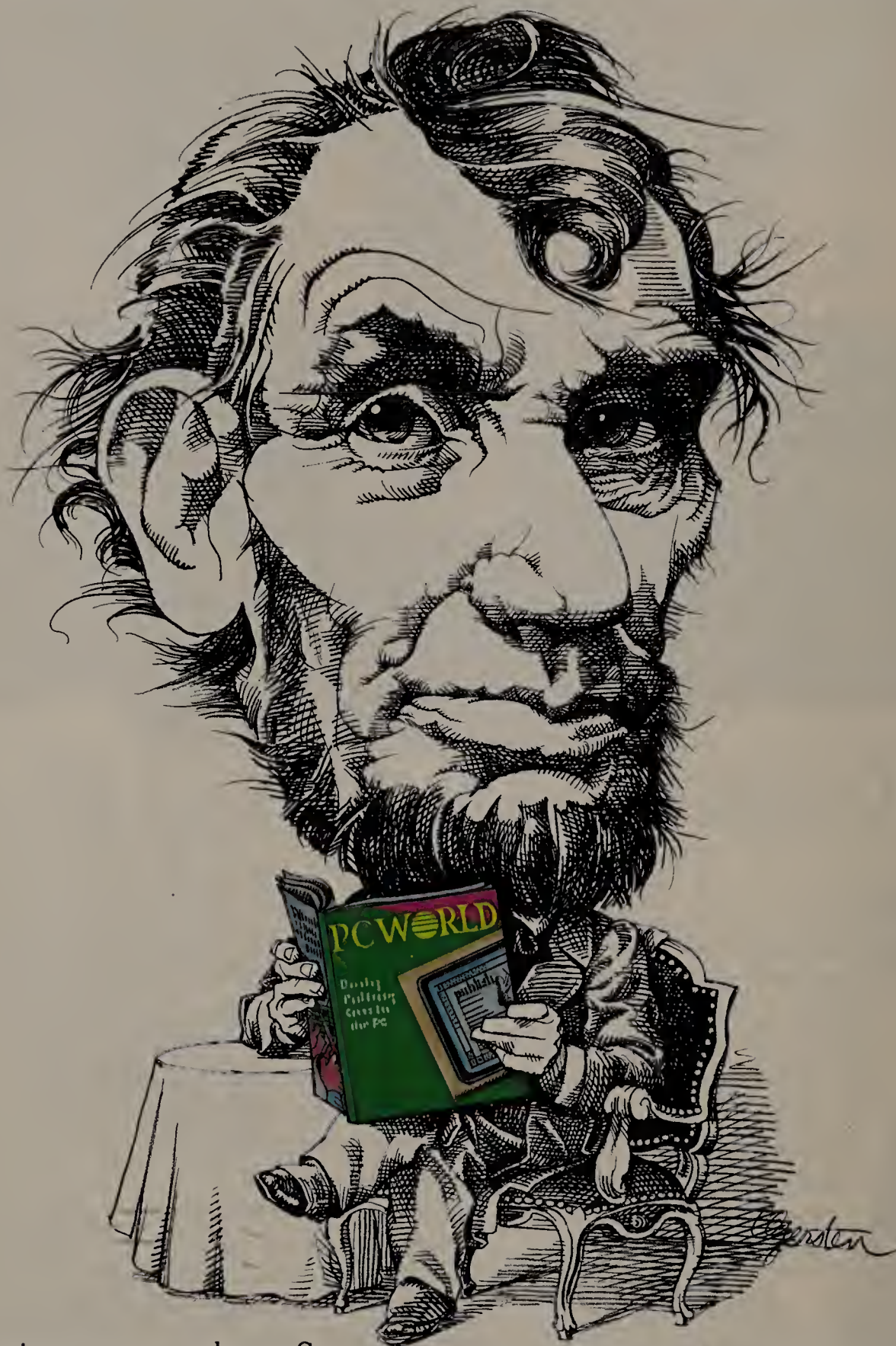
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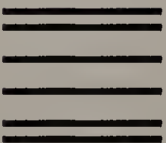
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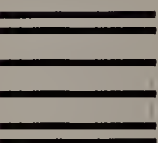
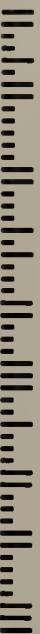
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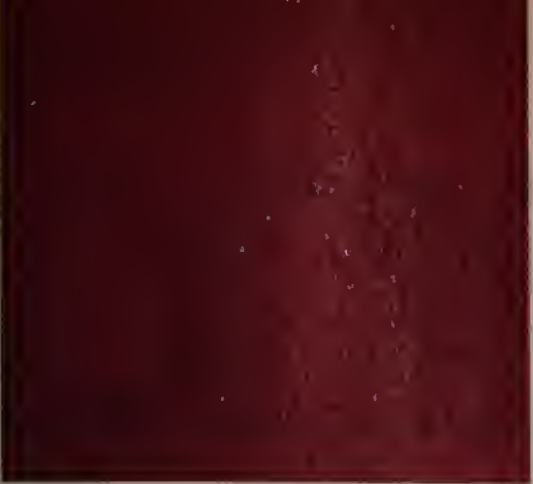
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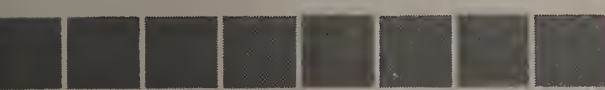
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Letters

Reactions and responses from the PC World community



Nontaxing Tax Transfer

As employees of the first company approved by the IRS for electronic tax transfer, several of us read "The Electronic Taxman" [PCW, April 1987] with great interest. Contrary to the article, we've found the IRS to be flexible on transmission times. For the most part, we stick to the times allocated to us, but even during odd hours we've never been refused permission to transmit a tax return. Acknowledgment files are almost always available that day and never more than two days later.

The article also failed to mention what we feel is one of the strengths of the IRS program—its people. Without exception, the IRS personnel we've dealt with have been competent, cooperative, and hardworking.

*John T. Hewitt
Mel Jackson, Inc.
Virginia Beach, Virginia*

Documentation Sight Unseen

We at Associated Services for the Blind were highly entertained by the letter from Bill Dawson [Letters, PCW, April 1987]. Mr. Dawson laments that "running PC software without printed documentation is next to impossible."

Next to, maybe. But impossible? No. Hundreds of blind PC users work with WordPerfect, WordStar, PC-Write, dBASE, Q&A, and many other off-the-shelf programs with the aid of voice synthesizers and screen navigation software. Blind users pay for documentation like everyone else and usually receive a hefty printed manual they can't read. Of course, they use the software anyway.

Our advice to Mr. Dawson is to search the program disks for README.DOC and .BAT files, which is what blind users do. He might also count his blessings. When he gets a manual, at least he can read it.

*Paula Oto
Associated Services for the Blind
Philadelphia, Pennsylvania*

By Another Name

I trust PC World implicitly. I delight in the magazine's design and graphics. I linger over the well-written articles. I devotedly read David Bunnell's column. To the jeers of co-workers, I even defended his right to editorialize on sodomy laws. That's why it surprises me that you've sold the upper-right corner of the March issue's cover to Borland International. I know Borland means big advertising revenues, but I trust PC World too much to think you're willing to sell editorial space to anyone with enough money. Keep company names off the cover unless it's a headline. I'd hate to lose faith in one of the best publications on the newsstand.

*Dian Schaffhauser
San Diego, California*

We feel it's important that readers know about significant new products—that's one of the reasons we publish PC World. We feature products on the cover solely on this basis. In this case, since the Sprint word processor had just been announced, we felt pretty certain that our audience would

(continues)

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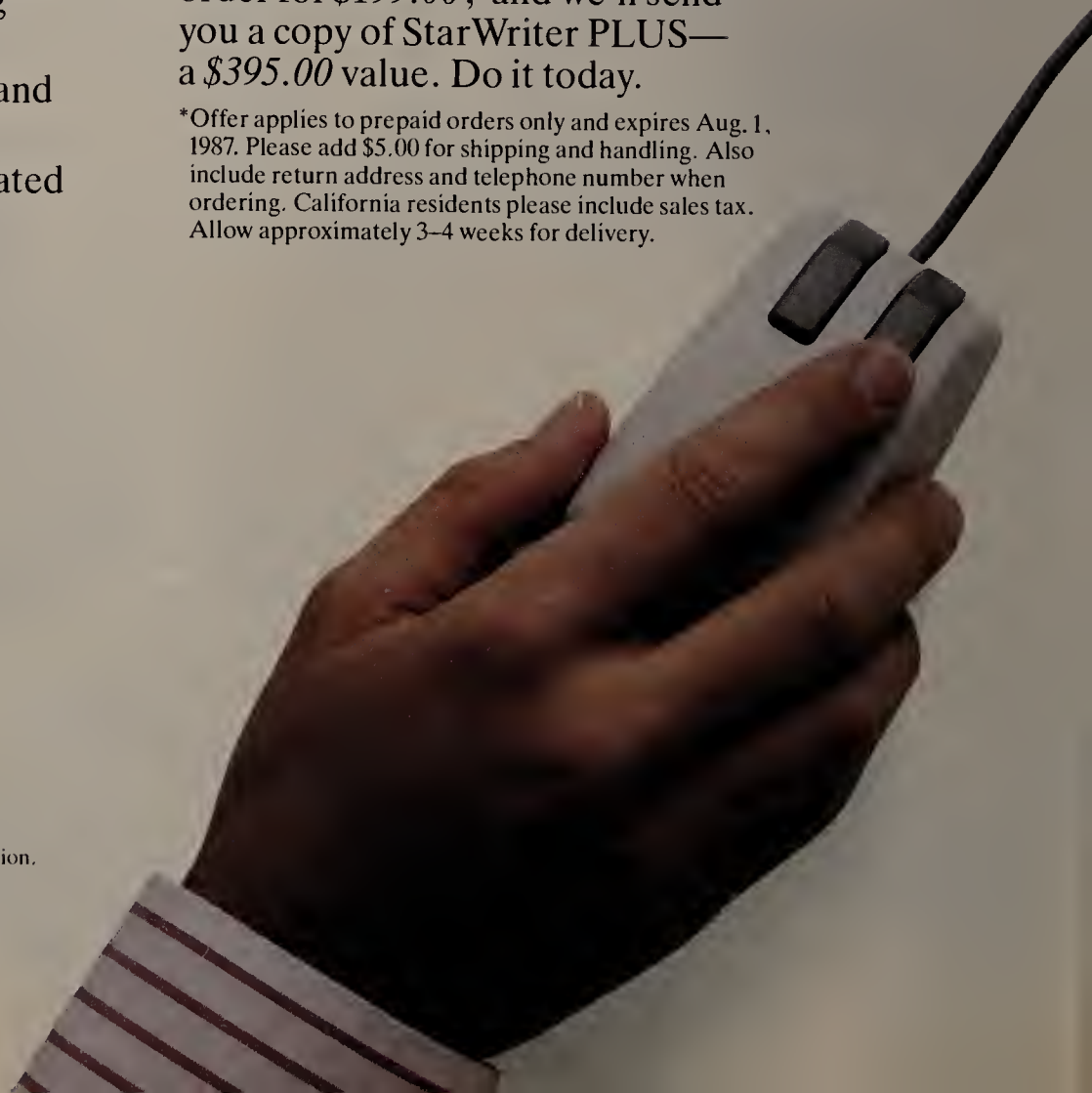
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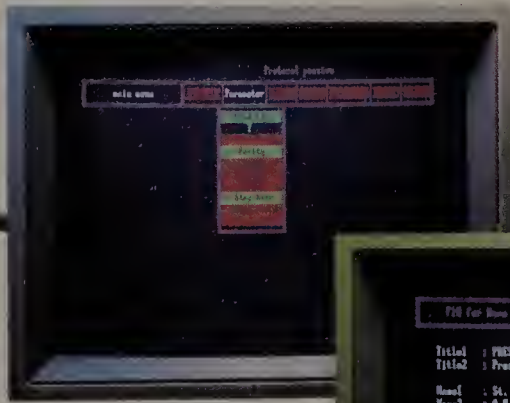
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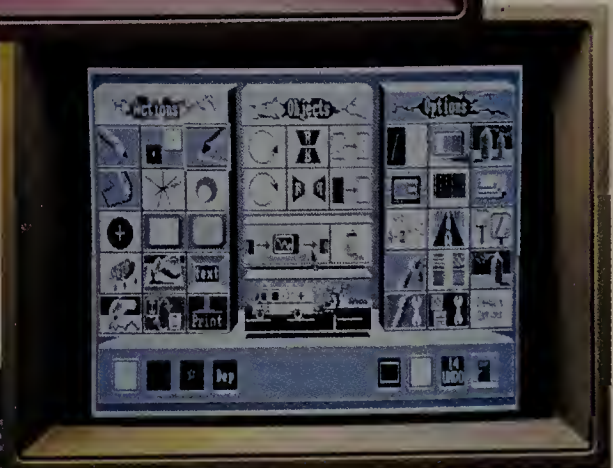


Four Most

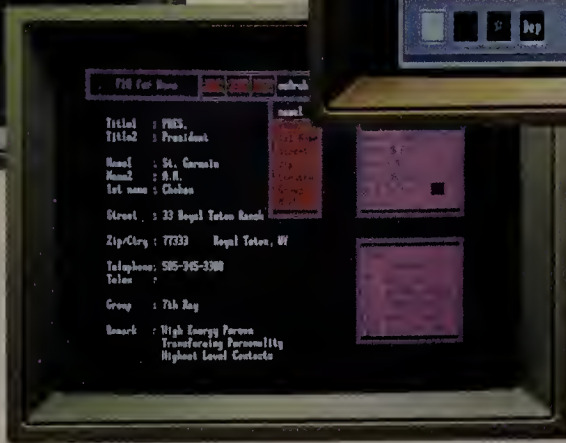
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not recognize the name, although they would recognize the company. By the way—for the benefit of our readers, we maintain a strict separation between our advertising and editorial operations. —Ed.

Information Now

I enjoyed the candid comments of the participants in the PC World CD ROM Forum [PCW, April 1987]. I'm involved in the development of text retrieval products, so the dialogue between Alan Kay and Tom Lopez concerning full-text retrieval was particularly interesting. Why wait two to three years for CD ROM when a great

potential for dispensing archival information to PC users with floppy and hard disk drives already exists? Granted, some applications cry out for CD ROM, but there are many that can make use of the hardware and software currently available.

When educational institutions and businesses realize they can deliver archival text information to current PC users in an enhanced and searchable form right now, the term *information age* will have meaning for more people.

Ken Logsdon
Austin, Texas

A Little Knowledge

David Bunnell misses the point in "Hypervisions" [David Bunnell, PCW, March 1987]. The information explosion is a well-documented phenomenon of concern to researchers, libraries, and the federal government, among others. The data explosion he describes, however, is a different concern.

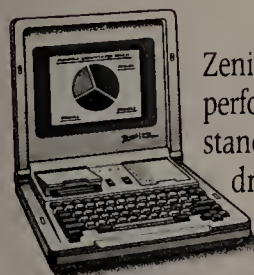
As Mr. Bunnell should know, data isn't the same as knowledge. Data provides the basis for making inferences about the universe. Inferences become knowledge when they pass the tests of time and public acceptance. Along the path to becoming knowledge, inferences also pass through numerous

(continues)

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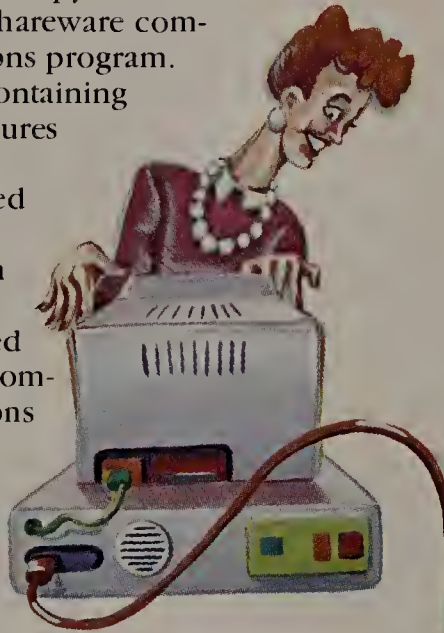
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• **ProComm™**—full-working evaluation copy of the popular shareware communications program. Besides containing many features found in high-priced packages, ProComm can be customized to make communications as easy as turning on your computer.

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†Source code included.

System Requirements: IBM® PC/XT/AT and compatibles only. IMAS and dBASE Financial Graphics not available for dBASE II.



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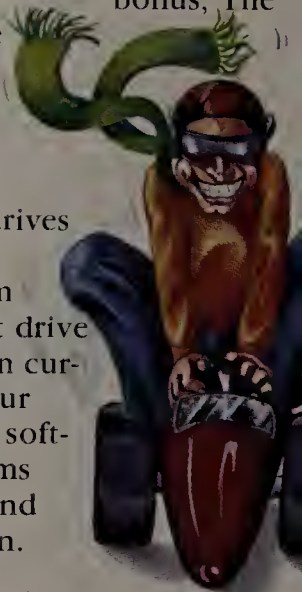


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filtering processes represented by people such as editors, reviewers, and decision makers. In his enthusiasm, Mr. Bunnell makes a classic error by not only ignoring the need for filters, but equating signal transmission with effective communication of knowledge.

I do, however, endorse his desire to organize a place where "people from all parts of the information industry can come together to exchange ideas." Such a forum, however, is appropriately called a university.

Norman Howden
Louisiana State University
Baton Rouge, Louisiana

Write Now for Speed

Thank you for including *Write Now* in the review of low-cost word processors, "Economy of Words" [PCW, April 1987]. We do not understand the graph entitled "Quality at the Expense of Speed." It implies that *Write Now* lacks quality, but no supporting arguments were raised in the article.

Laurence Grodd
Engineering Manager
Airus, Inc.
Portland, Oregon

The graph indicates that Write Now was the quickest performer in our timing tests, but it also had fewer features than the two other programs tested. —Ed.

Metro Meets Word

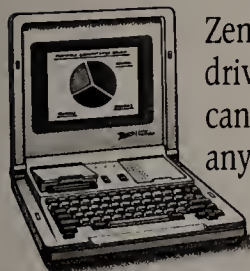
I'm one of the many consumers in this country who never complain to a manufacturer or a retail outlet. However, Lotus Development has finally provoked me to voice a protest. After purchasing Lotus's *Metro*, I was extremely impressed with its quality and ease of use. However, I soon discovered that *Metro* has an undisclosed flaw—it causes *Microsoft Word 3.1* to freeze.

A Lotus customer support representative confirmed that *Metro* won't work with *Microsoft Word 3.1* but couldn't provide a solution

(continues)



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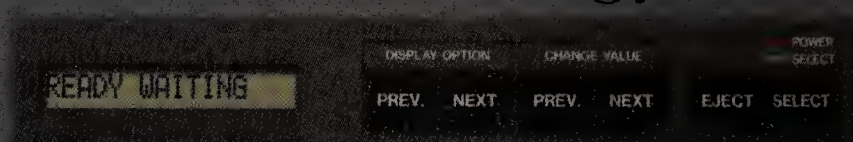
The more advanced something is, the simpler it should be to use.

That's exactly what we had in mind when we developed our latest printers, the P321SL and the P341SL. They don't just look sophisticated, they make turning your hard work into hard copy a lot easier.

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There's even a built-in tear bar to make tearing off the continuous form paper both neat and easy.

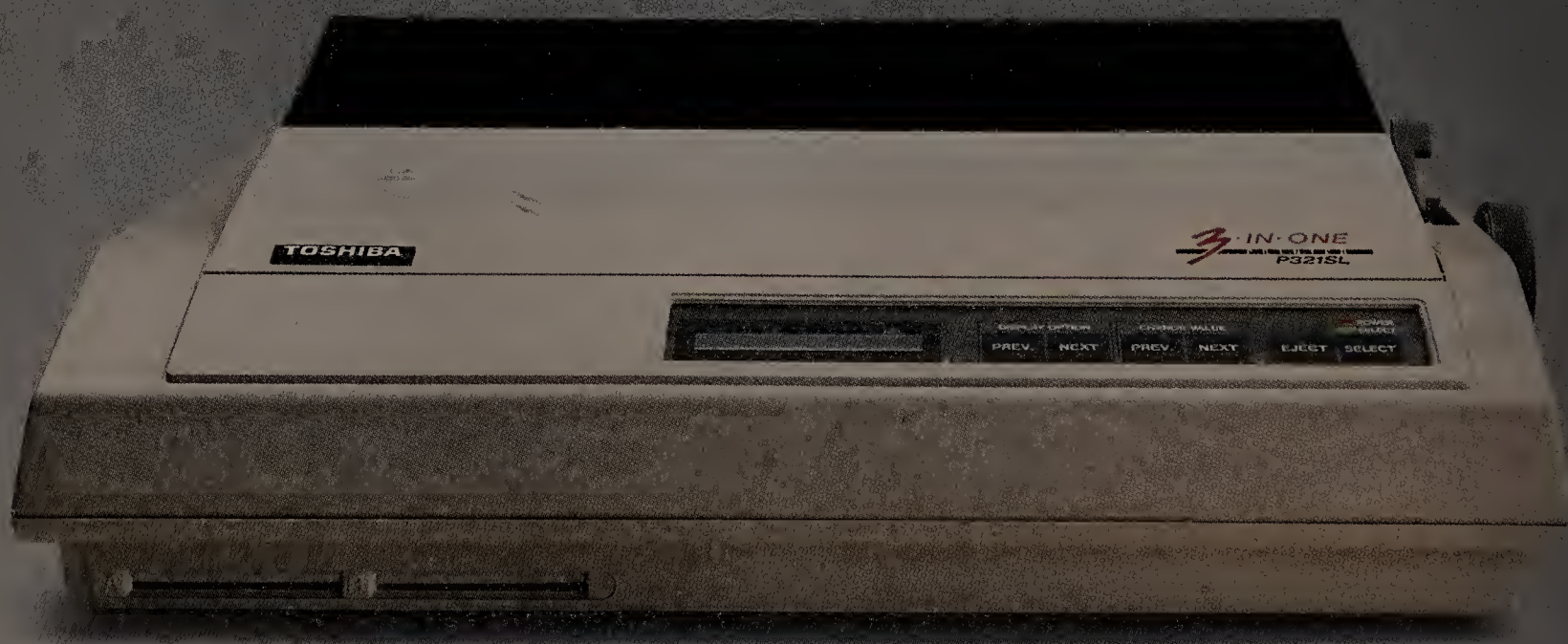
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out trying to find and switch the dip switches anymore. There aren't any.

The new front panel lets you choose type fonts, pitch, emulation, quiet mode, lines per inch, page length and more at the touch of a button.

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es Child's Play Paper Route.

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Toshiba 24 pin letter quality.

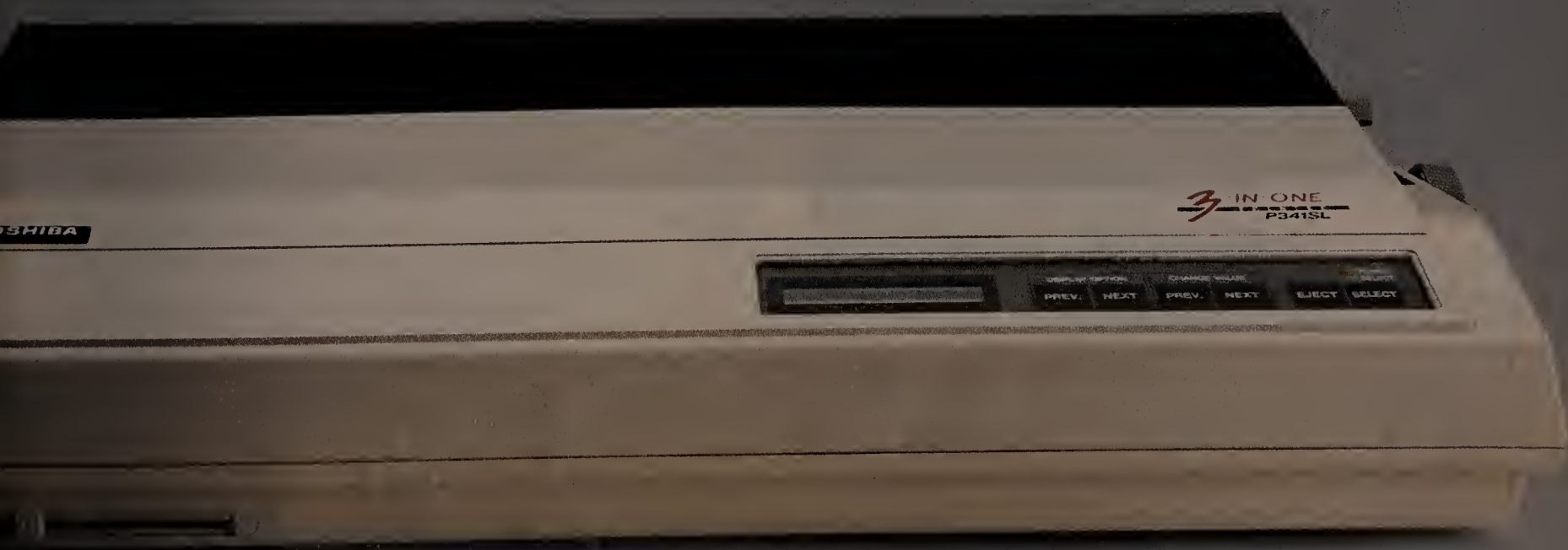
9 pin printer quality.

So no matter what your needs are, from standard letter correspondence to full-size spreadsheets, Toshiba makes a printer for you.

All this should make choosing the affordable P321SL or P341SL as easy as using them.

For the name of your nearest Toshiba printer and computer dealer, call 1-800-457-7777.

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to the problem or tell me when or if Lotus would fix it.

It's irritating that Lotus failed to disclose this conflict to *Metro* customers. Lotus's reputation and its support for the non-Fortune 1000 user is definitely slipping.

Frank Andrews

Santa Fe, New Mexico

Microsoft and Lotus both confirm that *Metro* and Word 3.1 are incompatible. Microsoft is currently testing both products, however, to determine whether a solution is possible. For further information about *Metro*, you might want to take a look at "Metro Traffic Control" in the June 1987 issue of PC World. —Ed.

Bully of the Year

If the PC industry presents a Bully of the Year award, Lotus Development deserves it hands down. By contending that the copyright of 1-2-3 gives them a monopoly not only over the source code but also over the "look and feel" of the spreadsheet, Lotus has set out to punish its competition with what amounts to litigious harassment.

As a professional photographer, I'm acutely aware of copyright infringement. If my copyrighted work were reproduced without permission, I wouldn't hesitate to take action. However, if a competitor chose to study and emulate my work, I'd feel flattered. If he or she improved on it, I would have to work that much harder to com-

pete, it's true. In neither instance, however, would I have a monopoly on the "look and feel" of my work.

Lotus borrowed the spreadsheet concept from *VisiCalc* and *Multiplan* and improved it. Now they want to destroy the essence of the free marketplace in which 1-2-3 evolved.

A company that can successfully sell a product at five times the cost of its competition should have better things to do with its time than pick on the little guys.

Mel Morganstein

Newark, New Jersey

(continues)

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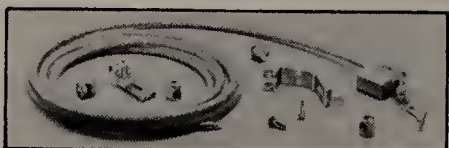
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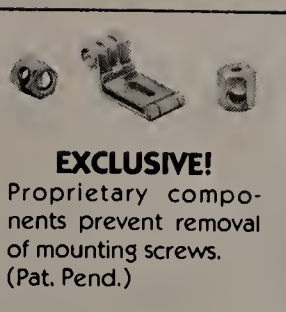


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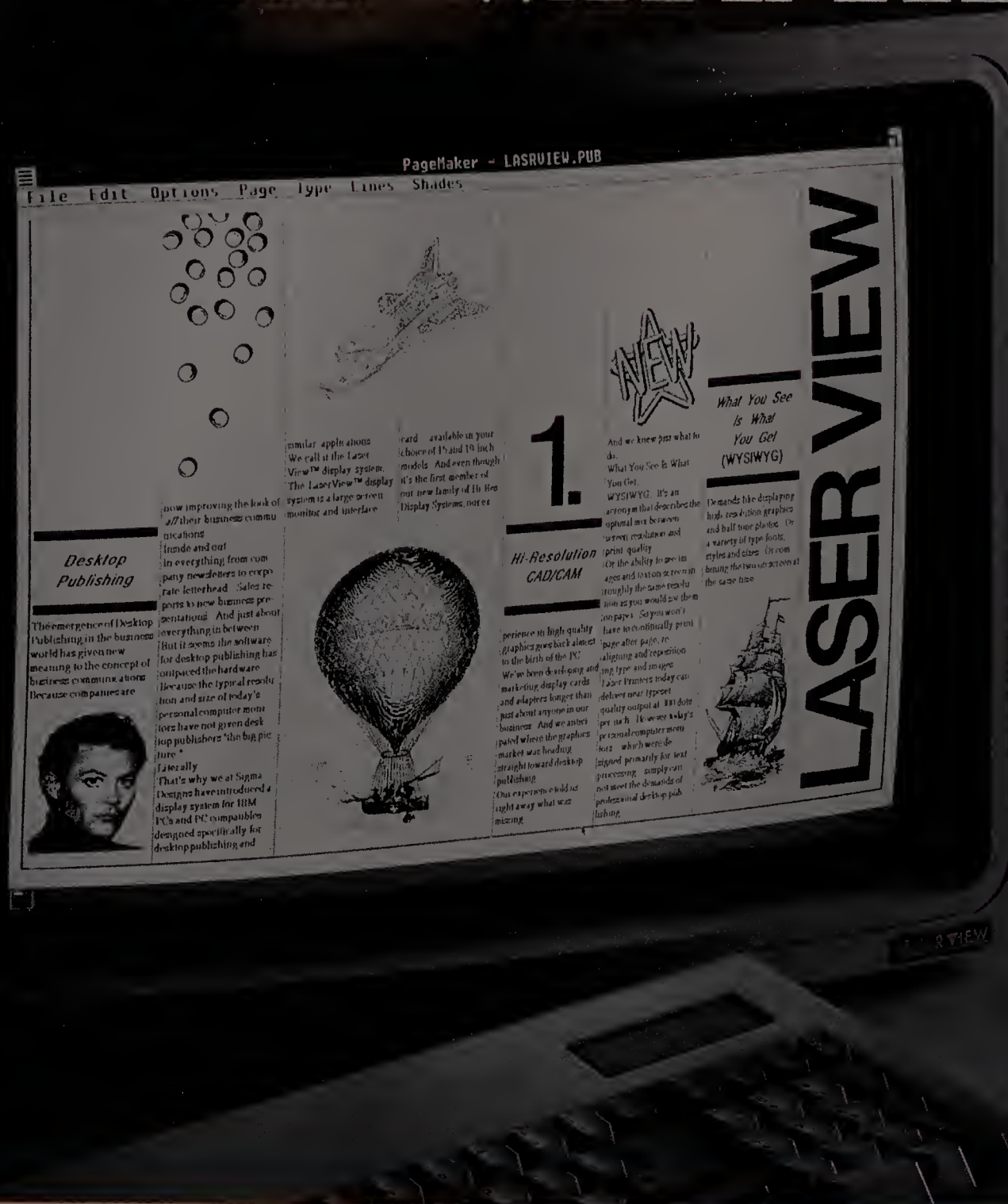
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Case History #47582

"With over a million lines of source code, MortgageFlex is probably the largest application ever written for a LAN," says Lester Dominick, the developer of this monster program for mortgage banking back office management. "We probably encountered just about every programming challenge imaginable, but DataFlex's powerful 4th generation programming language proved more than a match for every situation."

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before them have done. DataFlex macro commands also take much of the burden off the programmers by automatically taking care of the tedious chores of index manipulation, screen handling, cursor positioning and file management. We also like the way DataFlex uses indexes because it really lets the program take advantage of the capabilities of the system and run extremely fast."

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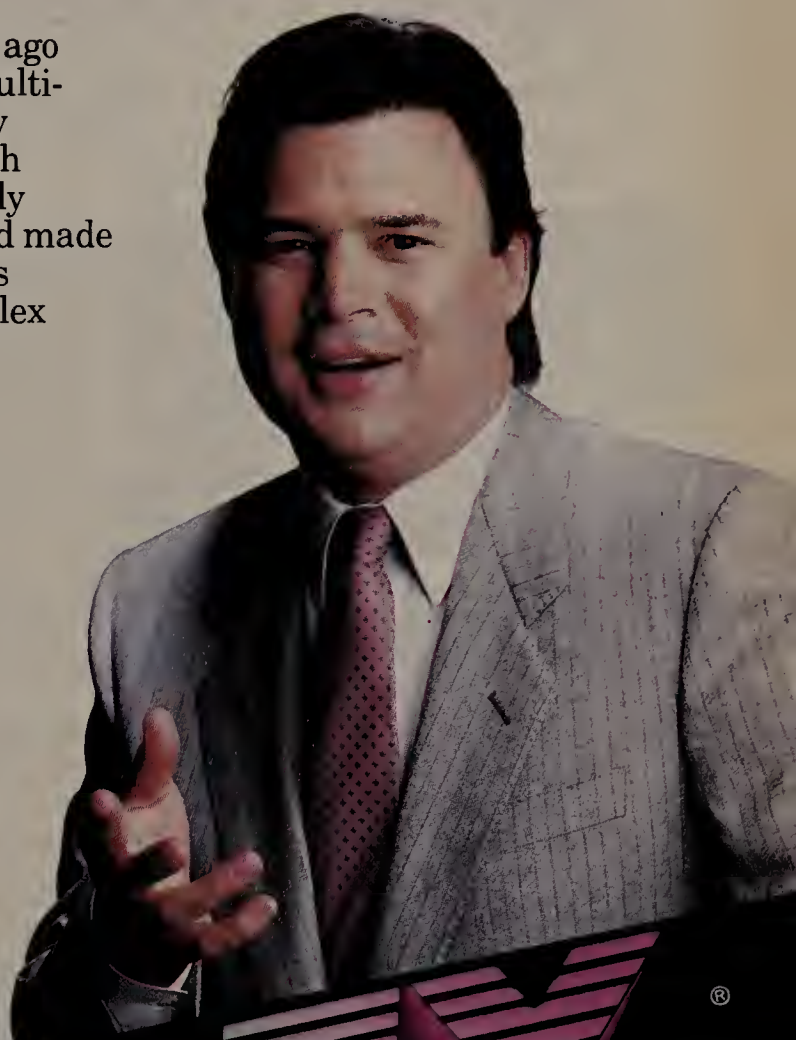
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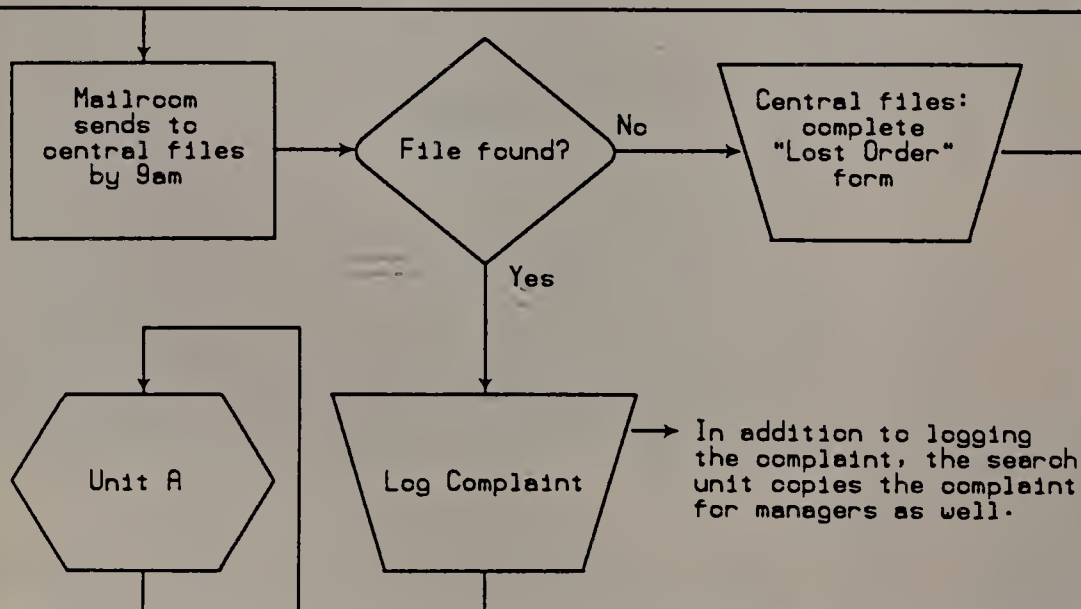
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Genifer's Helping Hands

Here's a footnote to your review of the *dBASE III Plus* code generator, *Genifer* ["dBASE Power Tools," PCW, March 1987]. The technical support Bytel provides by telephone and MCI Mail is unsurpassed. There's no additional charge or subscription fee, and the replies are prompt and complete. If the program had only half the power with this kind of support, it would still be an outstanding value.

Burke Pease
San Jose, California

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Readers looking for Allied Computer Systems' low-cost network switch mentioned in "How to Avoid Networking" (PCW, April 1987) can contact the company at 3060 Johnstown-Utica Rd., Johnstown, OH 43031, 800/237-5465 or 614/892-2100.

Letters should be mailed to Letters, PC World, 501 Second St., San Francisco, CA 94107, or sent electronically to MCI Mail PCWORLD/179-3813, CompuServe 74055,412, or The Source STE908. All letters must include the writer's name, city, and state. They should not exceed one double-spaced typewritten page. We reserve the right to edit letters. ●

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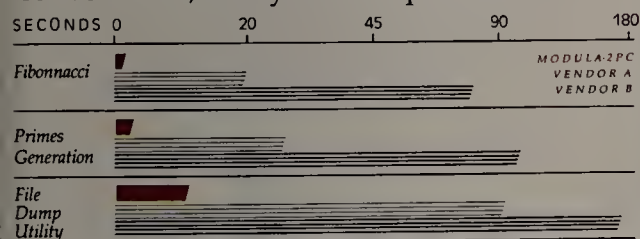
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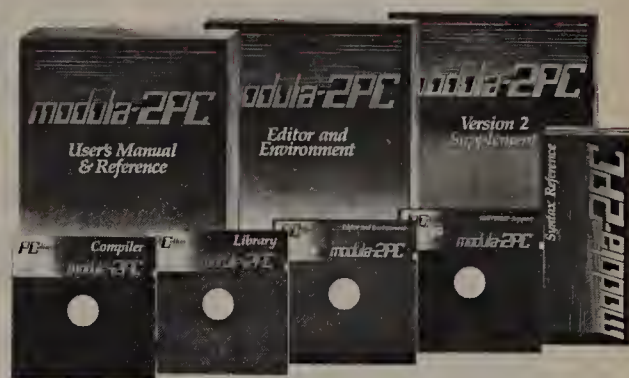
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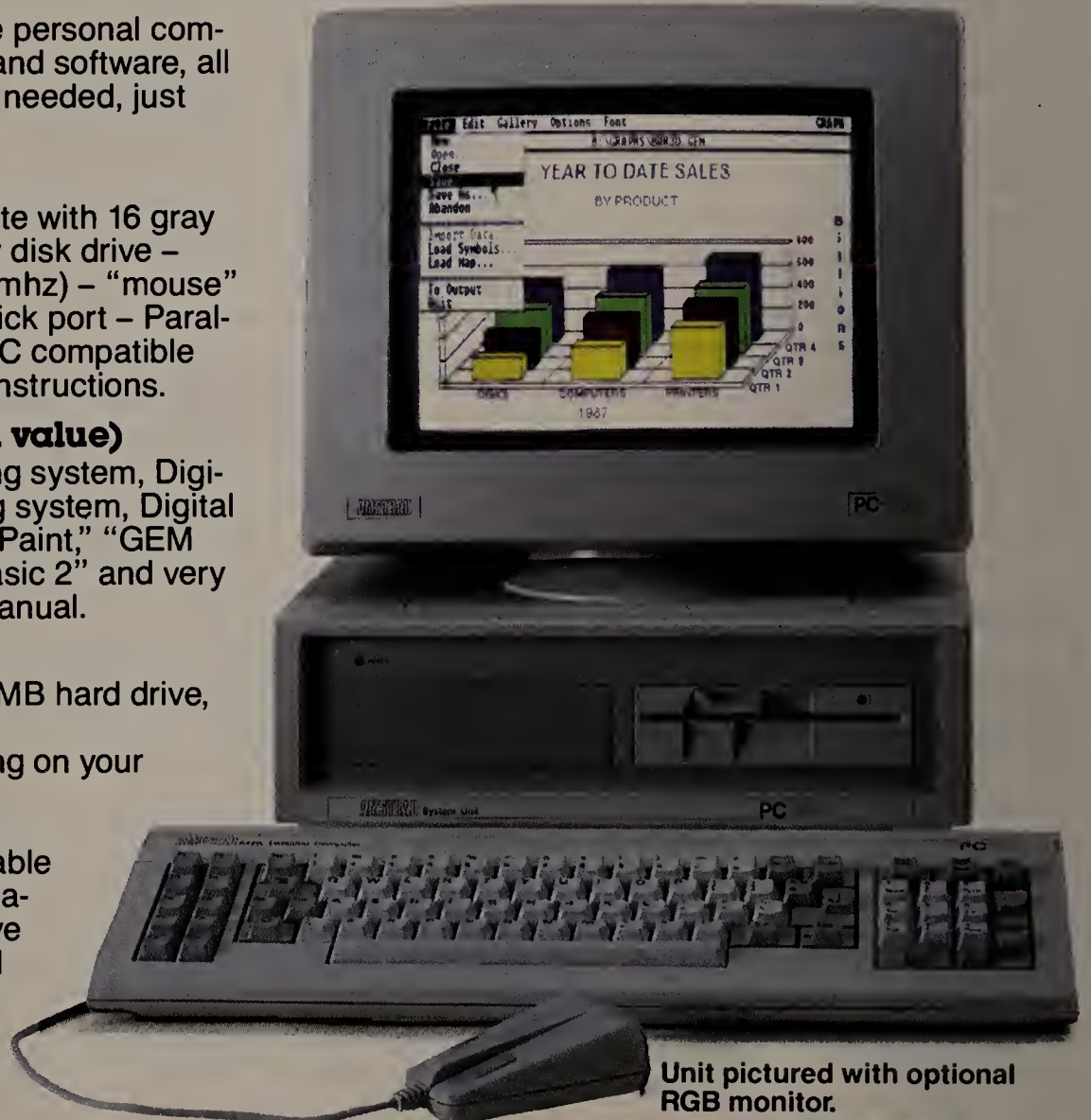
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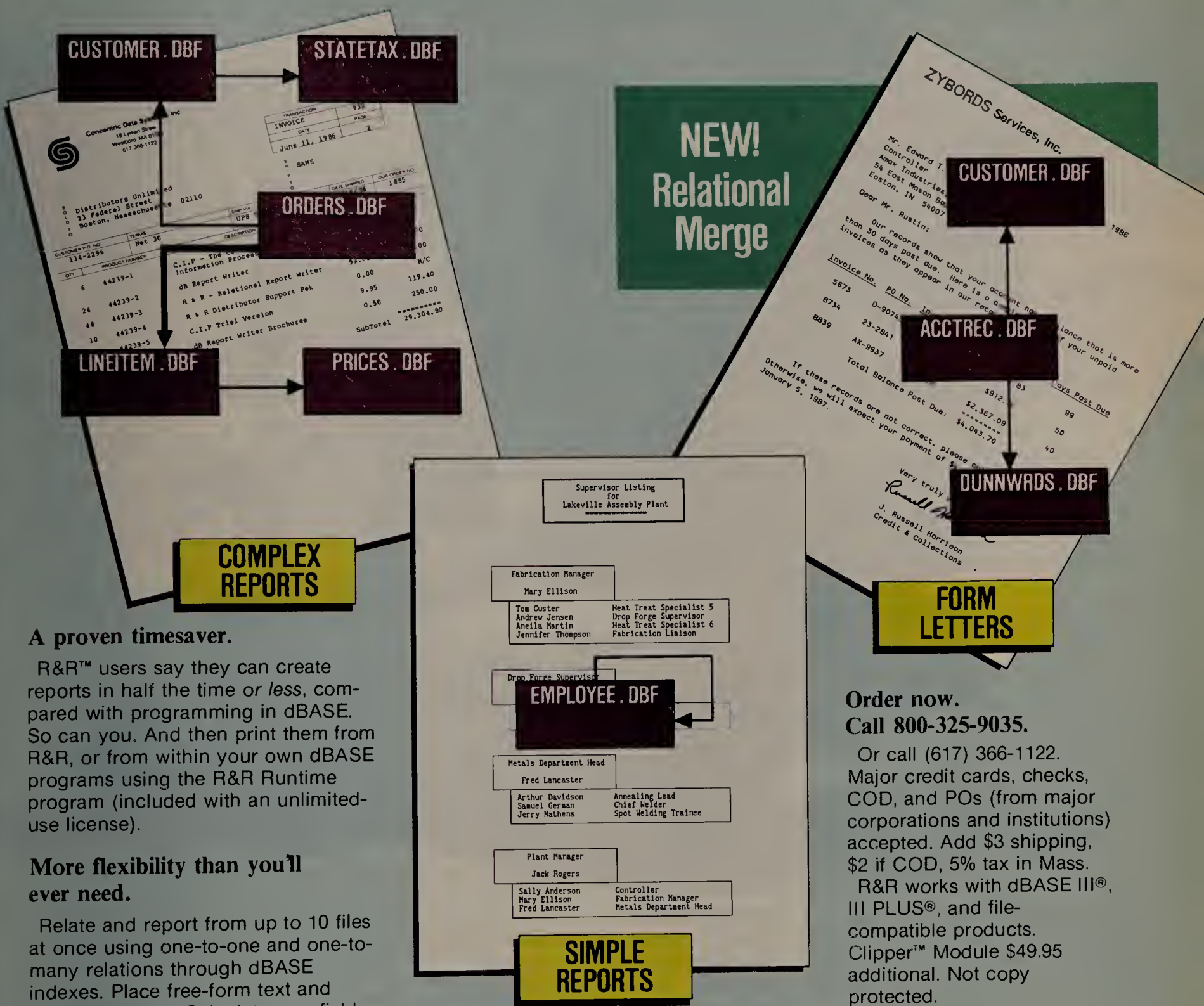
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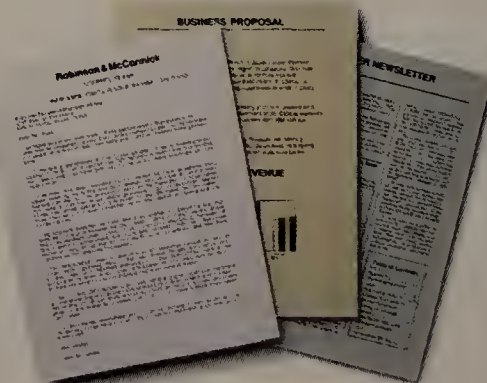
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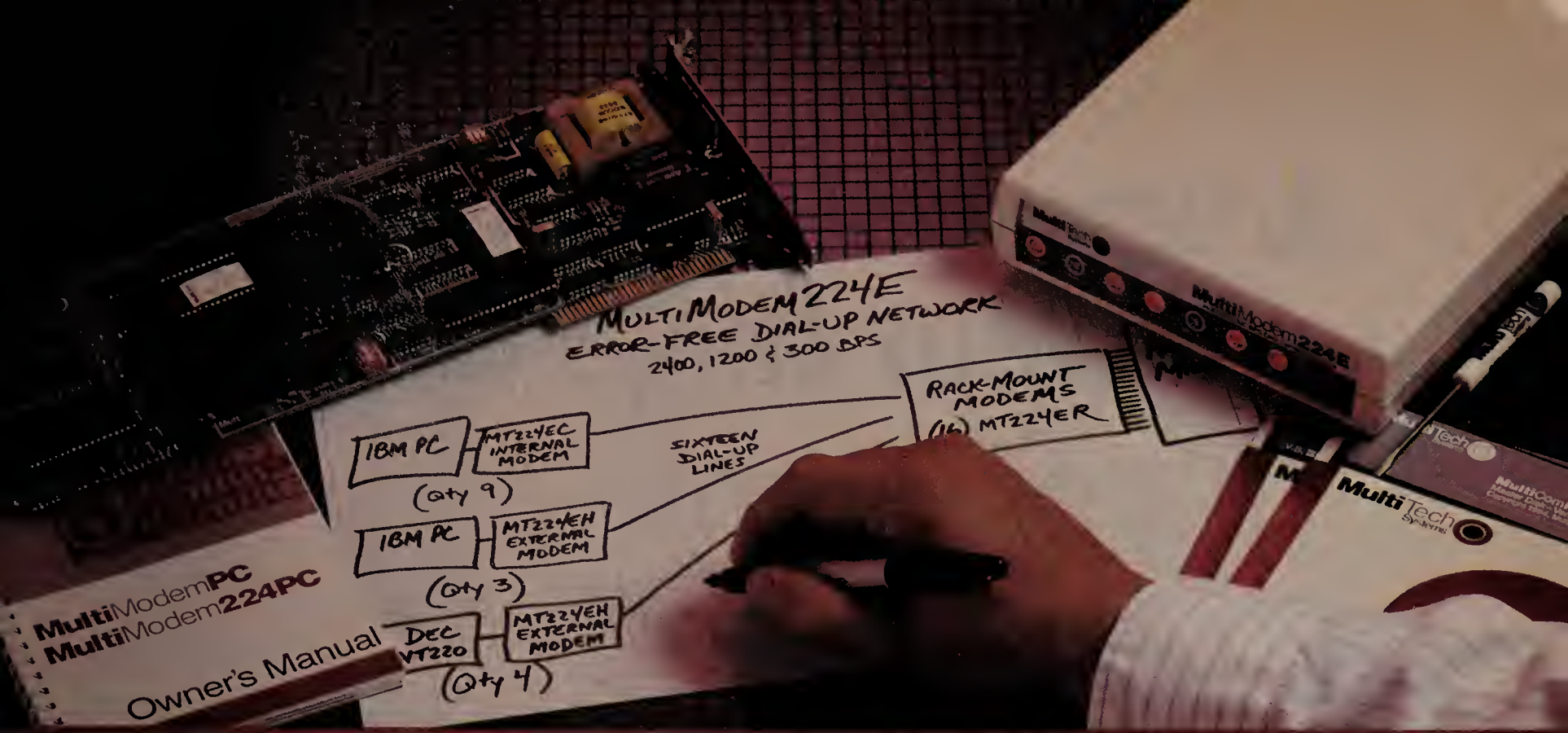
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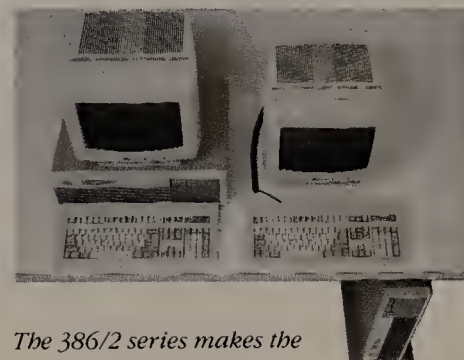


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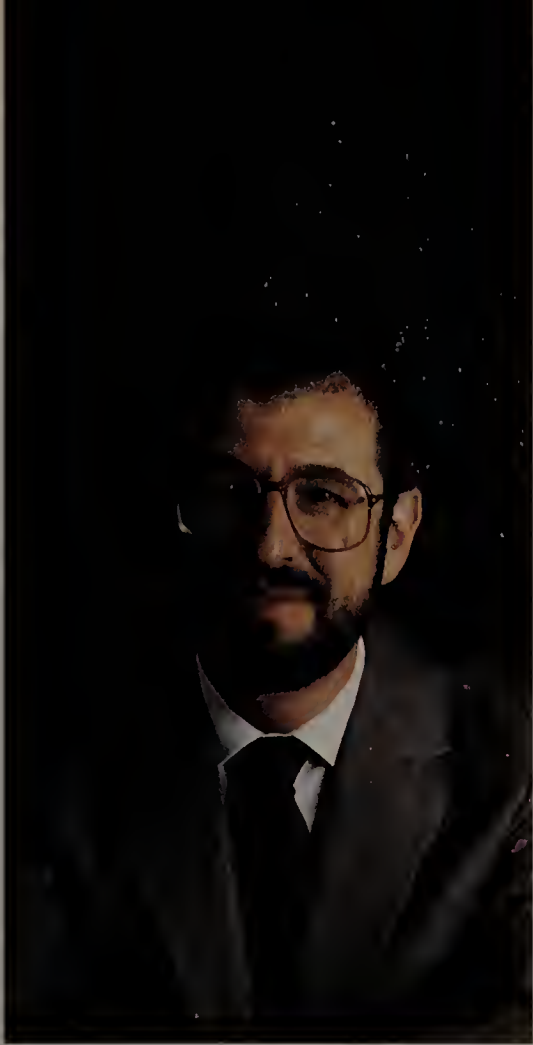
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Harry Miller

The Latest and the Greatest

Competition drives some software vendors into a flurry of innovation, while others doze in the shade of old accomplishments.

Welcome to *PC World's* 1987 Software Update. Like you, we're always interested in new products and substantial improvements to existing ones. Sometimes the quickened pace of important software introductions and revisions demands special attention. To help you cope with this season's wealth of programs, we've abandoned our normal section structure to focus on more than 30 of the most significant recently released programs. They stand out as either established leaders or promising upstarts and thus represent the standards by which next year's newcomers will be measured. We've deliberately omitted products that *PC World* has featured in recent major reviews.

Some application areas are dominated by a well-known, entrenched leader. *1-2-3* virtually owns the spreadsheet market, just as *dBASE III Plus* commands the lion's share of the data management arena. In other market seg-

ments several strong products vie for leadership. The word processing, graphics, and communications fields are ripe for new contenders.

The combination of strong competition and entrenched standards is a mixed blessing. The struggle to gain market share in wide-open segments encourages manufacturers to advance the state of the art in their product lines; at the same time a proliferation of strong new products makes training staff and developing support services in large companies more difficult. On the other hand, while dominant products create de facto standards that simplify training and maintenance, the dearth of stimulating competition and the inertia caused by the sheer size of the installed base combine to slow technological advances.

For example, *Microsoft Word* and *WordPerfect* leapfrog each other in features as well as in market share. The vendors of these products issue new versions as frequently as every six months. By comparison, *1-2-3* and *dBASE* undergo upgrades only about once a

(continues)

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year. The creators of these two market monsters don't seem concerned by the slew of challengers that offer extended functionality, ease of use, and performance—or simply lower prices.

Consider the spreadsheet race in which 1-2-3 holds such a long market lead. *pfs:professional plan* offers the kind of power and ease of use that 1-2-3 could achieve only with its \$150 *HAL* add-on. *pfs* costs roughly half as much as the high-priced spread, and it sports a sparkling new interface. Similarly, *Paradox* aims to erode the *dBASE* stronghold by offering a distinctive visual perspective on relational data management.

In addition to pointing out the wide array of software products featured in this issue, let me direct your attention to our report on the IBM announcements. As part of our ongoing coverage of this important development, these two articles cast perspective on the hardware and software products that seek to establish the next major standard in personal computing. Watch these pages next month for in-depth reviews of some of the new machines. Also, please note that we have added an index to products reviewed or otherwise mentioned in the issue to the reader service information in the back of the magazine. We hope you will use this new regular feature as an aid to getting more information on the products you read about in *PC World*. ●

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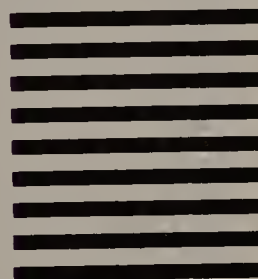
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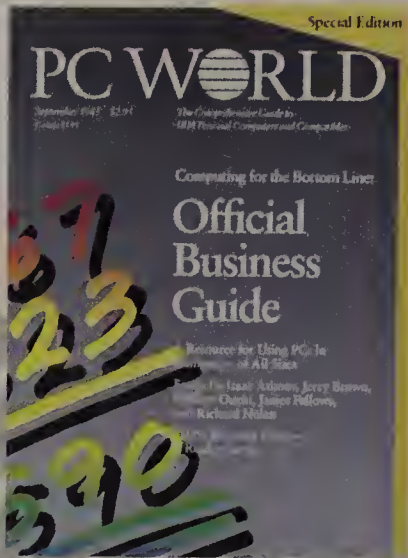
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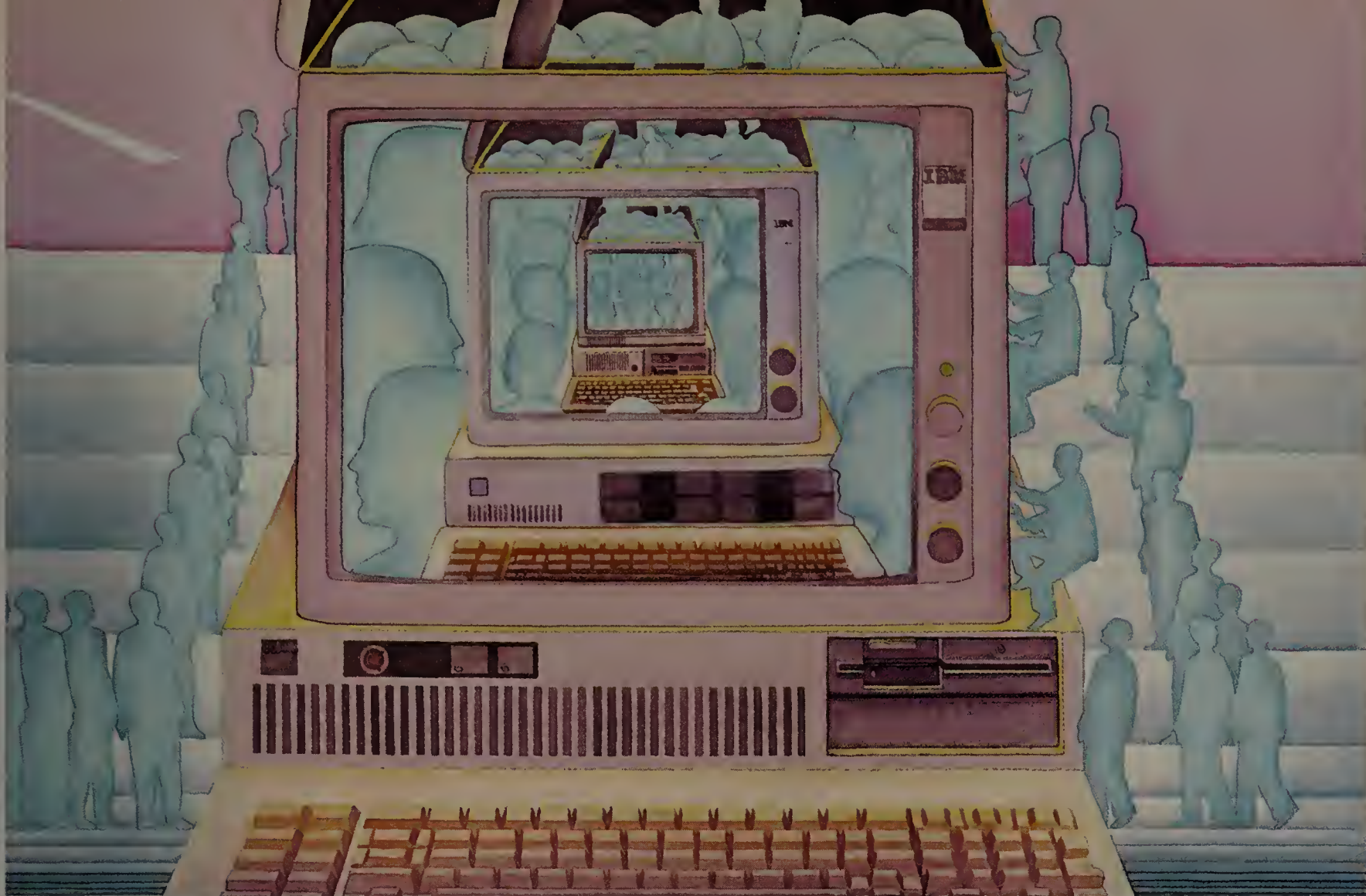
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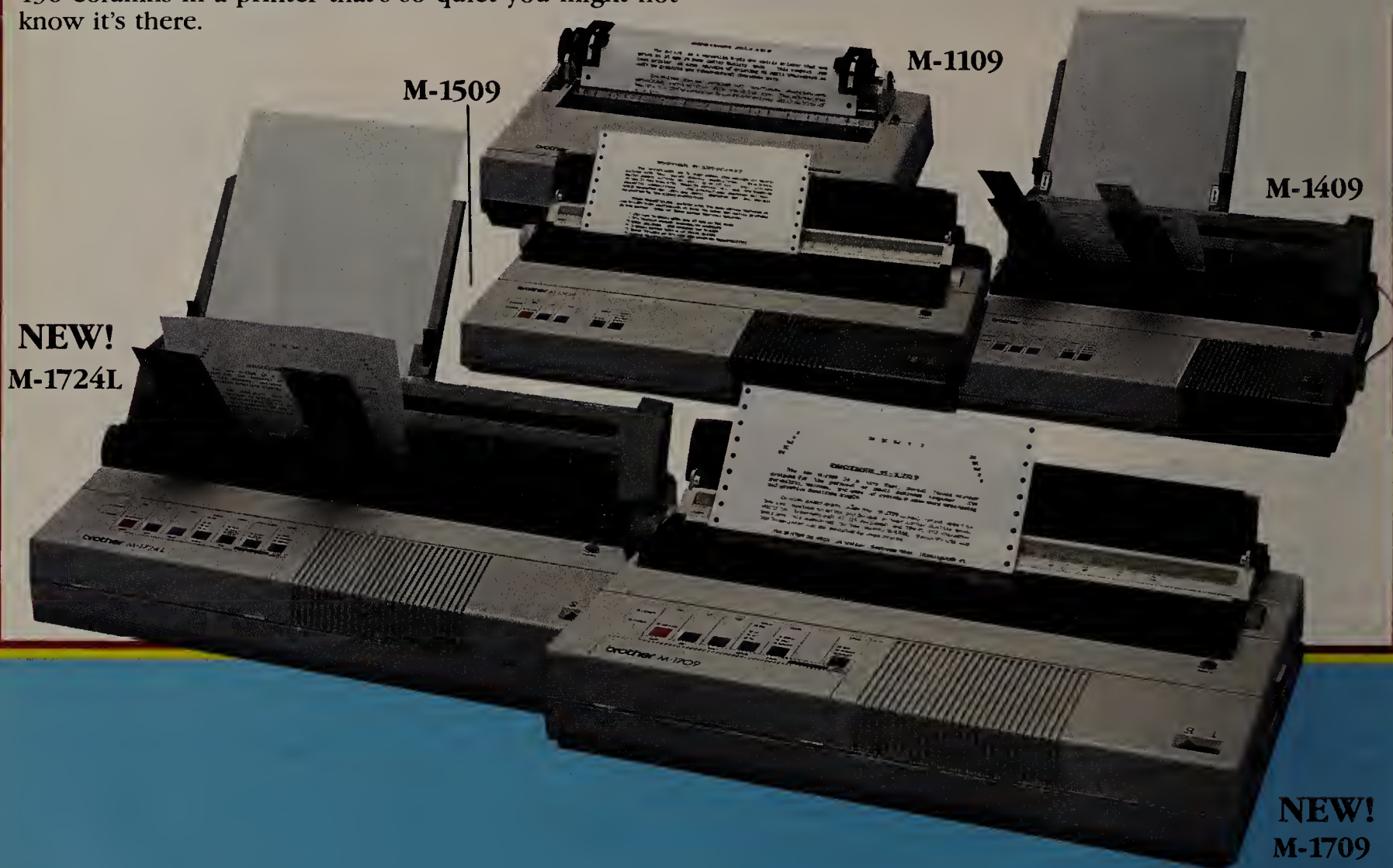
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Every spring, computer industry hotshots trot off to Seattle for Microsoft's annual CD ROM conference and prepare to be blinded by the light. Last year, CD-Interactive, the Philips/Sony CD song-and-dance revue, stole the show. This year, GE accomplished the improbable feat of cramming an hour of full-motion video onto a compact disc.

Achieving that motion, however, represents only one aspect of GE's triple-threat Digital Video Interactive (DVI) technology. "We're not trying to replace the video cassette recorder—we tried that once," says Arthur Kaiman, director of digital product research at the David Sarnoff Research Center in Princeton, New Jersey. Instead, GE has created a powerful, highly programmable device that delivers high-quality digital video, computerized graphics, and stereo audio on the PC.

PC World View reports items of interest to computer enthusiasts and significant insights about industry trends and personalities.
—Eric Bender



Developers surround a prototype of GE's Digital Video Interactive system.

Using this impressive mix-and-match capability, one prototype (produced jointly with Bank Street College) walks young viewers through a Mexican rain forest to a Mayan temple. Viewers can journey step by step via joystick through the technicolor scene, move to the music of tropical birds, and listen to facts from a friendly guide who appears in full-motion video windows. "Even where full-motion video wasn't part of our intended application, it offered a new level of help and guidance," says Arch Luther, senior researcher at the Sarnoff lab.

Computer-generated graphics and animation, also called synthetic video, tend to cost less than video-based productions and add important interactive capabilities, says Dave Ripley, DVI applications manager. "In many markets, we've found that synthetic video is even more important than full-motion video," he exclaims.

Prototype DVI applications are a boon to the imagination: Landscape architects can superimpose computer-generated flora onto a digitized shot of a house, enabling buyers to visualize summer yield-

View

News and notes for the computing community

ing to autumn or the appearance of the shrubbery five years hence. Furniture dealers can paint vivid pictures of living rooms full of their wares, incorporating various fabrics and design arrangements. And joint work between GE and Activision seems likely to endow *Flight Simulator* with *Top Gun*-style verisimilitude.

Much of GE's demonstration hardware is anything but exotic: The firm is using an AT with an off-the-shelf Sony CD ROM player and Sony monitor. The specialized hardware is mounted on two boards, one for video and one for audio. Motion video quality is 256 lines by 200 lines at 30 frames per second. This looks softer than a standard digital TV image, but application developers aren't complaining. Video stills can be displayed at higher resolution, up to 768 by 480 lines.

GE, which has formed a new business group for DVI, plans to sell boards by early next year (priced initially between \$6000 and \$8000 for a video/audio set). In addition, GE intends to license the technology to other manufacturers.

The Sarnoff center was RCA's historic video and electronics lab; GE, RCA's new parent, recently

donated the center to SRI International. DVI benefited from an earlier RCA project that was a solid technical success but a resounding market failure—the CED player, a proprietary, nonlaser videodisc player.

When RCA abandoned its CED investment in the early eighties—several years and hundreds of millions of dollars into the venture—the Sarnoff engineers who had sought ways to exploit the device for interactive applications began searching for another digital bandwagon. CD players had just hit the market, although their limited size and abbreviated bandwidth seemed destined to forever thwart attempts at real-time video.

VLSI chip manager Larry Ryan, whom colleagues credit with dreaming up the concept of DVI, had long pondered ways computers could harness the power of video images—in his words, “merge the quality of video with the control of graphics.” That assignment called for substantial processing power at both ends to compress and decompress the mammoth digital video files.

Real-time video on a CD requires data condensed to less than 1 percent of its original form, a task GE accomplishes with a proprietary algorithm that exploits similarities between successive video frames. Even so, crunching a

minute of video currently takes a minicomputer about a week. GE is seeking to shrink the cost and magnitude of that one-time operation by revising software and turning to affordable off-the-shelf parallel computers.

For decompression chores DVI video relies on two chips: a pixel processor that zips through 12 million instructions per second and a display processor that synchronizes the bewildering streams of display data. A general-purpose audio processor handles multiple sound tracks, and GE's own CD ROM adapter continuously reads data without bogging down the AT.

Hardware engineer Dave Sprague originated the crucial idea of using a programmable silicon engine to support graphics and video operations with equal facility. Instructions are stored in on-chip RAM, allowing multiple manipulations on each frame of video in real time.

With such malleability in mind, GE plans to offer a complete battery of software development tools. Among them is Michael Keith's *Warp* graphics package, which lets developers photograph a texture (like the side of a building), convert it, and map it into a

(continues)

Color It Flat

Zenith Data Systems soon may prove that a new world of color awaits on the horizon—and that it's flat.

Zenith's flat tension mask (FTM) picture tube injects new hues into display technology. The FTM sports a perfectly flat, virtually reflection-free faceplate and offers improved brightness, resolution, and color fidelity. If analysts' early assessments are correct, the design could usher in a new era of display technology.

"FTM is a revolution," says Aaron Goldberg, a vice president at International Data Corporation (IDC), a Boston-area market research firm. "If you consider the jump [from IBM's CGA to its EGA] as climbing a flight of stairs, the flat tension mask is like going to the moon." Market researchers agree that Zenith's brainchild may significantly raise the standard of display quality. "The FTM will substantially affect graphics ap-

plications," asserts Dataquest analyst Gregory Blatnik. "There's nothing else like it at the moment."

FTM's secret is an improved shadow mask, the metal screen found in all cathode ray tubes (CRTs). Each shadow mask has thousands of perforations that delineate the appropriate red, blue, and green screen phosphors, which produce the color video image when energized by the beam from the tube's electron gun.

A conventional mask is curved to conform to the picture tube's rounded face and sits directly behind the screen in a spring-supported metal frame. As electrons bombard the mask, it heats up and expands. This minute movement causes some electrons to energize the wrong phosphors and distort the color. A curved screen also

causes distortion at the perimeter as text and graphics bend.

In the FTM, the paper-thin shadow mask is stretched drum-tight (at up to 40,000 pounds of tension per square inch), directly behind the flat screen. This technique virtually eliminates movement due to heat, enabling the mask to have smaller and more numerous holes than its conventional counterpart has. Accordingly, more of the electron beam hits the screen. And because the FTM doesn't retain as much heat as a conventional CRT, it can be driven at higher beam currents.

The FTM's flat faceplate reflects less ambient light than does a rounded tube. This quality, coupled with a special antiglare coating, produces a screen almost completely free of glare. The result, Zenith claims, is a picture that is 80 percent brighter and offers 70 percent more contrast than conventional color displays.

Beginning in August, Zenith will offer a 14-inch display with a resolution of 640 by 480 pixels that "will be compatible with the CGA, the EGA, and whatever the prevailing display standard is," according to product manager Jeff Maziarek. Zenith has also demonstrated a 14-inch model capable of 1024-by-760 resolution.

IDC's Goldberg suggests that the 640-by-480 model, which is priced at \$999, "could well become standard for the so-called power user who spends a lot of time using graphics or desktop publishing software."

—Wesley Nihei

Moving Pictures Go CD (continued)

computer-generated object (like a box that represents a building).

GE is considering DVI not only for PC add-ins but for PC peripheral devices, stand-alone players, and TV accessories. Although the prime audience was initially deemed to be consumers, "we believe that you don't go directly for the consumer market," Kaiman says. "It's going to take time."

Even as maintenance workers repainted lab signs, the DVI team underscored its commitment to honing the system design—and entertained a long parade of suitors. "We don't want to keep the market all to ourselves. We did that once before, and it was a mistake," Kaiman says. "Our problem is picking the right partners."
—E. B.

Ode to an Electronic Muse

*Just wait 'til I tell of this story
'Bout you, PC World Readers, in
glory*

*You get a lot done
And do it with fun
The world is your territory.*

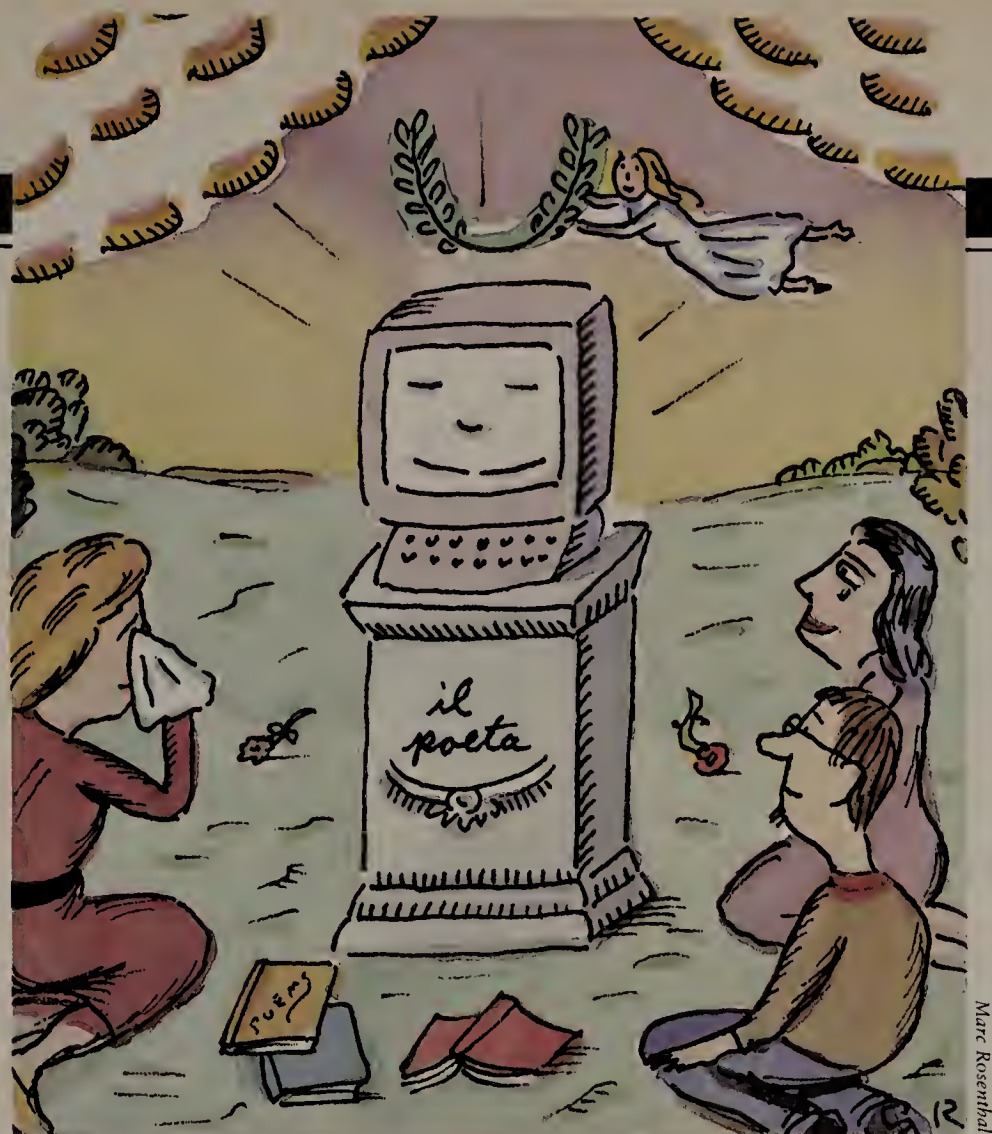
*I'm thinking of you, and I find
Your style to be one of a kind
A transistor bard
Invented this card
To tell you that you're on my
mind.*

What this country really needs is a good \$10 poem. Or maybe a billion poems for \$10, which is what *Your Personal Poet* offers.

While detecting the individuality of the poem here may be a little difficult, the verse shows what a great leap forward *Your Personal Poet* represents for poetry processing.

Early poetry programs created verse that rhymed and satisfied requirements for meter, but the content tended to be gibberish. *Your Personal Poet* produces greeting-card quality prose, either a "light limerick" or a "serious and sentimental" 15-line poem. A quick survey in one office found most of the silicon-based poetry indistinguishable from the human-made variety, and one poem even left readers misty-eyed.

Dwight Minkler II, coauthor of *Your Personal Poet* and a programmer with 20 years of COBOL



experience under his belt, played around with computer-generated poetry for a decade before inspiration struck late one night in 1982. Racing to his Osborne 1, he drafted the outline of *Your Personal Poet* before dawn. Perfecting the program took several years, however, and the IBM version didn't make it to market until this year.

To write a poem the Minkler way, you spend a few minutes answering ten simple questions. You supply the recipient's name, the sentiment (which can vary from 'Happy Thanksgiving' to 'Hang in There'), the recipient's two most distinctive traits (such as ambitiousness, cuddliness, laziness), and so on. Within 30 seconds, the program commits the creative act.

If you don't like the resulting doggerel, you can request a rewrite. "Even if you enter the same information twice, you won't get the same poem," Minkler says. "The program keeps track of what it has just done and tries not to do

it again." According to Minkler, a mathematician calculated that *Your Personal Poet* can produce roughly 1 billion unique poems.

How does the \$9.95 program succeed where its predecessors failed? "I would love to tell you," Minkler says. "But we have applied for a patent, and until it's granted, to tell you more goes against my lawyer's advice."

Poetic justice, perhaps? —John Eckhouse

Your Personal Poet
Computer Poet Corp.
P.O. Box 7707
Incline Village, NV 89450
800/422-POET
List price: \$9.95
Requirements: PC, XT, AT, or
compatible

Lighting Up the Big Board

Exec-PC, the bulletin-board answer to SuperStation WTBS, connects PC users continents apart.

What includes 650MB of hard disk storage, receives 500 phone calls a day from 16 countries as distant as Japan and Chile, and downloads public domain software 33,000 times a month?

If you instantly replied Exec-PC, you're probably among the 4000 subscribers to this bulletin board, which is housed in a modest basement recreation room in Shorewood, Wisconsin. The big board caters to business PC users, many of whom treat it "as a dirt-cheap [PC] consulting service," according to system operator Bob Mahoney. "Some of the foremost experts in the country call this system," he says.

Exec-PC's storehouse includes 20,000 public domain programs, ten conference areas ranging from CAD to hardware acceleration, and some of the slickest conferencing and electronic mail (E-mail) software to scroll across a screen.

A one-year subscription to Exec-PC costs \$45. That buys an hour of connect time each day (at

up to 9600 bps), which most users consider a bargain. Says Nick Kees, a Milwaukee PC consultant, "I've tried other boards, but even considering CompuServe, I get the most for my money here."

Mahoney, a 34-year-old former systems consultant and corporate information center manager, began Exec-PC in 1983 as a way to share his burgeoning collection of public domain programs. He also hoped to curb his late-night PC addiction by sacrificing the PC to full-time bulletin board service.

But word soon got around that a treasure trove of software was just a modem away. Within months Mahoney found himself with more than 700 registered users, all irked to hear a busy signal on Exec-PC's single phone line.

After months of poking and pondering, Mahoney accepted his PC's failure at multitasking. He then built a system that provides simultaneous access to up to 25 users, thanks to 25 slave boards—each hooked to a phone line—running under TurboDOS. Exec-PC skirts power outage disasters by means of a curious backup power pack that includes four golf-cart batteries.



Michael L. Abramson

Bob Mahoney
orchestrates Exec-PC, a giant among bulletin boards.

Exec-PC's popularity continues to climb, and Mahoney intends eventually to upgrade to 70 lines. Running the system has long since become a full-time job. And Mahoney still hasn't licked his PC addiction. He spent an entire Florida vacation calling Exec-PC around the clock—racking up \$1150 in long-distance charges. —Judy Getts

John Eckhouse reports on business for the San Francisco Chronicle, Judy Getts is a PC World Contributing Editor who's been known to tread the bulletin boards, and Wesley Nihei is a PC World Assistant Editor. ●

*Exec-PC
P.O. Box 11268
Shorewood, WI 53211
414/963-2880 (voice),
414/964-5160 (modem)
Cost: three months \$15, one year
\$45 (one hour of access per
day)*

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Not terribly cheap.



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We've engineered some features into this 386 that allow it to blow the doors off any computer short of a mainframe. Features like a less cluttered motherboard and a system that uses Static RAM. The result is a machine with zero wait

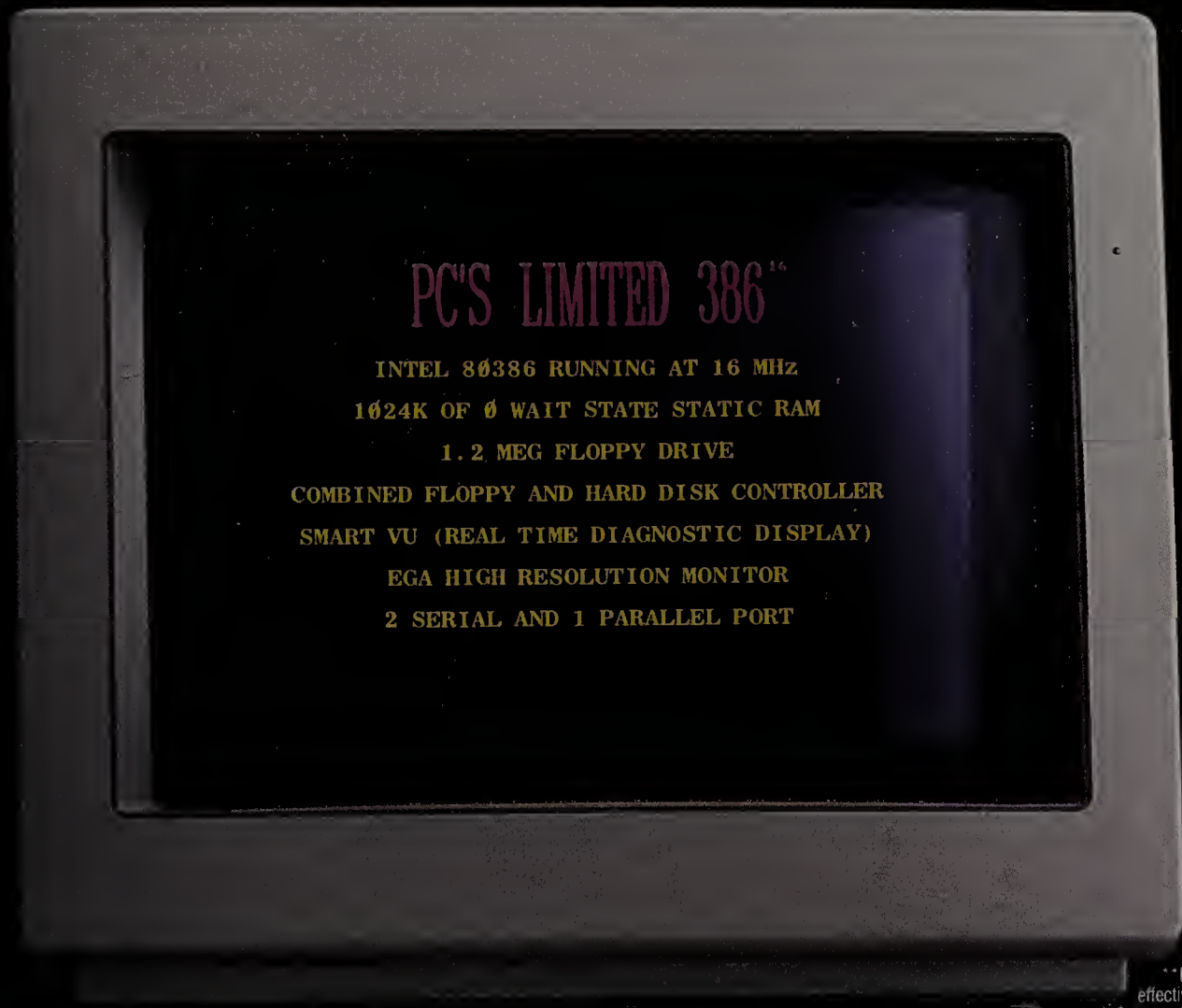
states. And that runs compatible software uncommonly fast—between 20 and 75% faster on 16 and 32 bit instructions, mathematical calculations, sorting and memory read and write tests.*

Now take a look at the price.

Because you buy directly from us, you bypass the middlemen—and their dealer markups. That means you can get our 386 for around \$3,000 less than Compaq's.**

So to all of you who already bought Compaq's 386, you have our condolences.

And to those of you who are thinking of buying one, you now have our phone number: 1-800-426-5150.



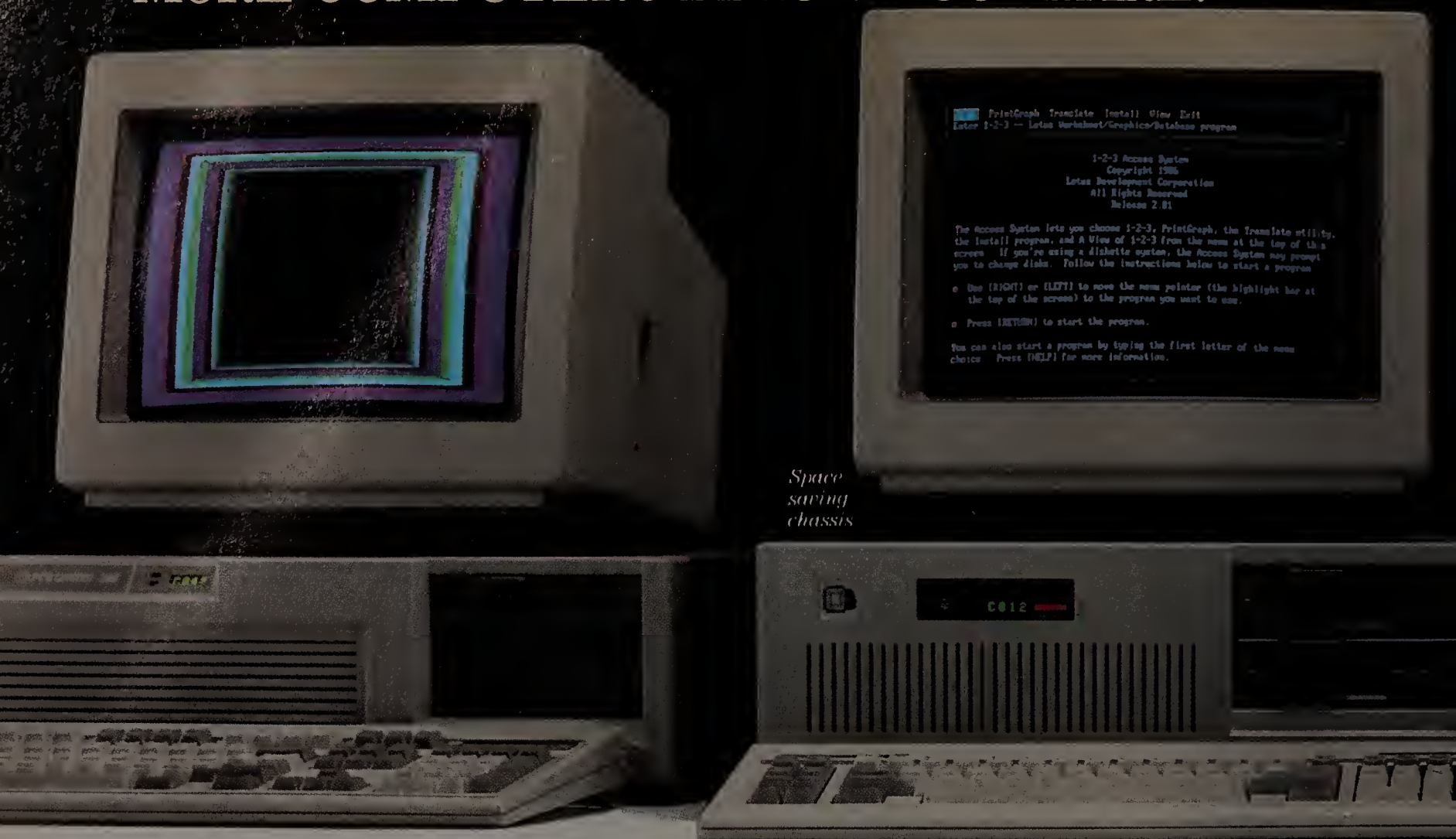
*PC's Limited 386 Benchmark Study is available upon written request.
**Based on current suggested retail price, effective May 1st for most comparable system: Compaq Model 70 with a 70 Meg hard drive list price \$8,699. PC's Limited 386¹⁶ with a 70 Meg hard drive list price \$5,399.



PC'S LIMITED 386¹⁶

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Product Outlook

News you can use about recent PC product announcements and upcoming releases

IBM opens the floodgates, MultiMate makes a comeback, WordPerfect launches its executive flier program, Dayflo hangs a bell around data, and lots more

Ken Greenberg



The Foals of a New Machine

At IBM, product introductions love company. Nearly lost in the backwash of the Personal Systems/2 has been a veritable deluge of debuts and makeovers.

Perhaps of greatest moment is IBM's attempt to ease the transition from a 5¼-inch to a micro-floppy world. For now, the PS/2's 3½-inch format is more a good idea than an industry standard. Mindful of that reality, IBM is offering its \$33 ♦**Data Migration Facility**, a parallel port connector plug and software utility that conveys a monologue from older IBM systems to the new kids on the block. Users need provide only a standard printer cable; IBM supplies the adapter, a 5¼-inch "send" floppy, and a 3½-inch "receive" floppy.

If you like your options a bit more concrete, you might consider a trio of IBM disk drives that reconcile mixed media. For \$190, you can pop an internal 720K 3½-inch floppy in a PC, an XT, or an AT and treat it as the B: drive under DOS 3.20 or 3.30. For \$395 you can park an external version of that drive next to the PC. For \$335, plus \$60 for an adapter, you can attach a 360K 5¼-inch floppy as the B: drive of any PS/2. In addition, each member of PS/2 family will accept a \$245 1.44MB 3½-inch floppy drive in place of a 720K drive. For more ambitious assignments, the storage grab bag also includes the ♦**3363 Optical Disk Drive**, IBM's first. It's a \$2950 write-once, read-many device into which you pop 200MB

cartridges. Eight optical drives can be daisy chained for 1.6 gigabytes of on-line storage. The drive's throughput is somewhat quicker than a floppy drive's but not quite up to the PS/2 Model 60's 30-millisecond (ms) 40MB hard disk.

For users increasingly favoring the plug-and-play approach, IBM obliged with a truckload of turn-key systems called ♦**SolutionPacs**. The showpiece of that line is the IBM Personal Publishing System, which consists of a PS/2 Model 30 with 640K, a 20MB hard disk, a color or monochrome monitor, a mouse, IBM's 6-pages-per-minute Pageprinter, the *Pageprinter Adapter Program*, *Microsoft Windows*, and Aldus's *PageMaker*. Mounted in the Model 30, the Pageprinter adapter bears a 10-MHz Motorola 68000 and 2.5MB of RAM. The adapter program includes support for PostScript and 43 fonts. With the Model 30 and a monochrome monitor, the system lists for \$8553. If you need a bit more processing horsepower, you can substitute an XT 286 or an AT for the 8086-based Model 30. Rounding out IBM's first team of tailored solutions are packages for mainframe-based publishers, attorneys, physicians, construction managers, designers, and accountants.

Big Blue rolled out a variety of PS/2 communications accessories and several local area network (LAN) offerings, including a 2-megabit twisted-pair version of the PC Network, targeted at academic work groups. At \$135, version 1.2 of the ♦**PC Local Area Network Program** runs on both the PC

(continues)



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Network and the Token-Ring LAN, delivers five times the performance of its predecessor, and can now run applications unmodified on either LAN. A supplementary ♦*IBM Local Area Network Support Program* imparts NETBIOS, IEEE 802.2, and Advanced Program-to-Program Communications compatibility to both networks. Also new is the \$595 ♦*IBM 3270 Connection*, an expansion board for PS/2 Models 50, 60, and 80 that, coupled with software, has rendered the 3270 PC line obsolete. The \$495 ♦*IBM 3270 Workstation Program* relies on windowing to manage up to four host and six PC sessions, and it works with IBM's own 2.25MB expanded memory board.

Among IBM's other new devices are faster Proprinters and a quicker ♦*Quietwriter* that truly lives up to its name. The \$549 ♦*Proprinter II* adds a Courier font, a more accessible control panel, and a 240-cps Fastfont type style for draft mode. The two 24-pin models—the \$799 ♦*X24* and the \$1049 wide-carriage ♦*XL24*—likewise deliver 240 cps and a clearer control panel. The \$1699 ♦*Quietwriter III*, at 120 cps in letter quality mode (192 cps in draft mode), is twice as fast as previous models and, at just 45 decibels, almost whispers.

Refusing to let Apple's Macintosh II steal the show, IBM made its pitch to musicians and composers with the ♦*IBM Music Feature*—a \$495 board for both the older PC and the new PS/2 lines. The board synthesizes up to 336

(continues)



Horror

Brace yourself.

Be prepared for some tales that'll make your flesh creep and your blood run cold.

The problem comes about in many ways. Inadvertent command error. System breakdown.

Power source failure. Whatever.

The problem is data loss.

And it led to these true-to-life stories of unending horror that could make you start regretting every moment you forgot to back up that important data of yours.

Read 'em and weep...



True-to-life
stories of
men and women
who didn't do
their computer
backup

and
lived to
regret it.

Stories.

Once upon a time there was a guy, let's call him Joe, who set up shop in the market research business.

He had a very small office, one corner of which was set aside for his computer.

Then one evening Joe got a visit from the data-crash monster.

It happened like this.

When he worked on the computer, Joe kept his diskettes next to him... in a shoe box, on top of a covered trash bin which doubled as a table top until he could get around to finishing the furnishings.

Each night before he left, he put the shoe box away in the desk drawer.

Every night but one.

Nearing completion of his first major research project, one evening Joe went home without remembering to take the diskettes off the trash bin.

The cleaning people took his diskettes out with the trash.

Oh, Joe was able to duplicate it, all right. In a mere three months.

Joe now backs up everything but the laundry marks on his shirts.

So the monster got discouraged and went on to other victims.

Kurt, a playwright, was working on the last act of his new play, which had been in rehearsal for six weeks. After various rewrites, Kurt was still agonizing over the right ending.

Two days short of opening

night, Kurt finally came up with the ending he wanted. He sat down to his computer and cranked it out.

After a few hours, when it was just about finished, the phone rang. As he

reached over to pick up the phone he somehow kicked the plug to the computer, and out of the socket it came.

(Kicking out plugs is one of the monster's specialties.)

Crash. That was the end of the ending.

Devastated because he knew he could never in a million years recreate it, he called the director and quit the show. The show never did open.

Finally, there's a horror story that actually happened to the writer of this copy.

I put together a compilation of idiomatic clichés once, with an eye to getting it published as a reference book.

In a move to another city I shipped some boxes ahead to be held by the hotel for my arrival.

Including one with the only copy of my book in it. Before my arrival it got lost in the shuffle.

Reconstructing the whole book was about as appealing as wrestling a jellyfish.

Scratch one book.

But if you think those horror stories are bad, you don't know the half of it...



Behind every horror
horror story was



Or story is another thing to happen.

Never relax your guard when dealing with the data-loss monster. Even if you've done your backup.

He has a one-two punch, you see.

He not only mauls the data you *don't* back up, he can also rip to shreds data you *do* back up.

Because those hard disks you're backing up aren't the only things that can suffer data loss, you know.

The backup media itself can have data loss, as the following gruesome details will show.

Data cassettes and video cassettes have an Achilles' heel monsters thrive on.

Their rollers and tensioners lack an independent support, and instead are part of the drive. Alignment problems may be the result.

Which means slipping and jamming.

Which means data loss.

Which means another victory for the insatiable data gobbler.

Don't go fleeing to floppies or backup software for mass storage protection, either. The Cruncher can mash them between his paws without half trying.

Floppies are great for

what floppies are for. Including even a little backup. But for backing up a lot of data, you'll not only get a tired arm slugging the things in and out of your PC, you'll get too much risk of crunching, crushing and creasing (deeds that data gremlins delight in perpetrating).

Imagine. You can even mess up your data by a simple fingerprint at the floppy's sausage-shaped opening. And if a fingerprint can mess things up, imagine what the big guy can do to your data with all his digits and limbs going at it.

Finally, some people are trying to outfox the monster by using a second hard disk that they only turn on when they need to use it.

That's like protecting your home with a burglar alarm that's not turned on all the time.

Turning on the second disk some of the time just means it's only at risk some of the time. It improves your odds, but you're still at risk.

And if that hard disk isn't the removable kind, fate could remove some of your data in a generalized problem like a fire at the office that could sabotage both your backup and main disk.

So what do you do, surrender?

No, you turn the page...



The monster



meets his match.

All good monster stories have happy endings where the beast gets his just desserts, and this story is no exception.

3M has figured out a way for you to exorcise the demons of data destruction.

Data cartridge tape.

An inexpensive, easy-to-use way to store lots of stuff in very little space.

A cartridge is only 5¼" tall (its little brother is only 3½") but it keeps the data-loss monster at bay better than anybody.

Data cartridge tape is less expensive than half-inch tape or the removable, rigid disk-based systems. And in fact offers a lower cost per

megabyte than any other type of removable mass storage for the PC user.

More storage capacity, too.

Up to 150 megabytes.

The tape itself is fully enclosed in a tough plastic shell that data-loss monsters find particularly frustrating. It stands up to rough handling, and thus can survive monstrous attacks that floppies can't.

You don't have to worry about data-loss problems from improper handling of the tape, because you don't handle the tape. It stays put in the cartridge.

The tape is further protected by a built-in metal plate that supports the rollers and tensioners. This precisely controls the tape

alignment, preventing slipping and jamming of the tape — something which can cause data loss in cassettes. There's also a little protective "shutter door" that cassettes don't have, which closes over the tape when the cartridge is disengaged.

All of which pretty much does the data-loss monster in.

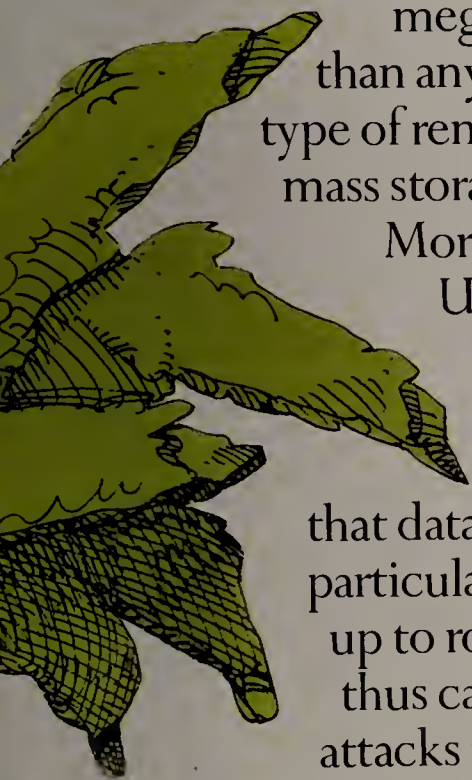
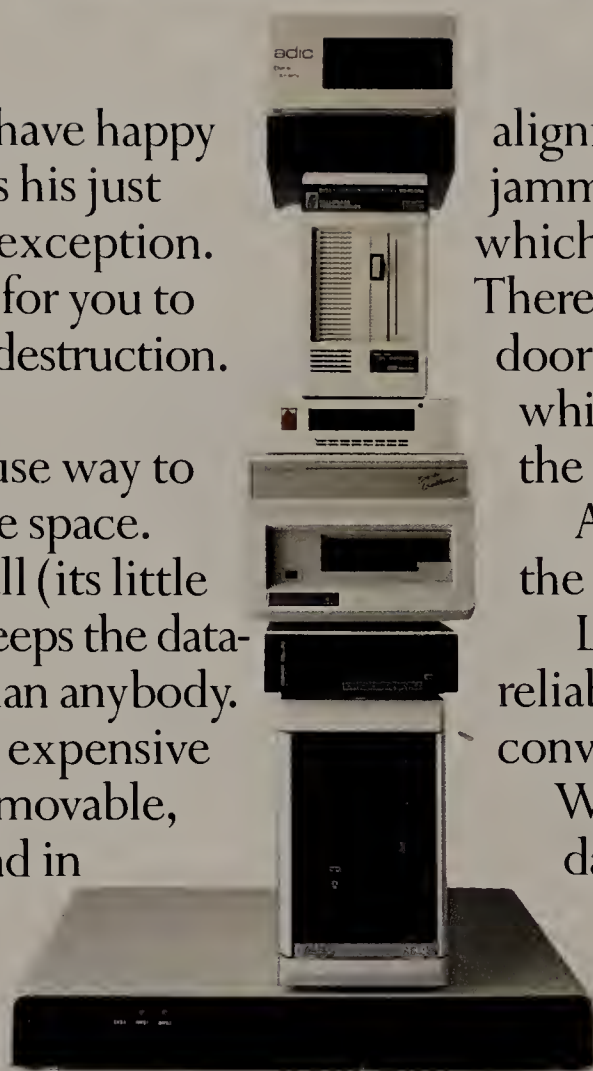
Leaving you with unequalled reliability, economy and convenience.

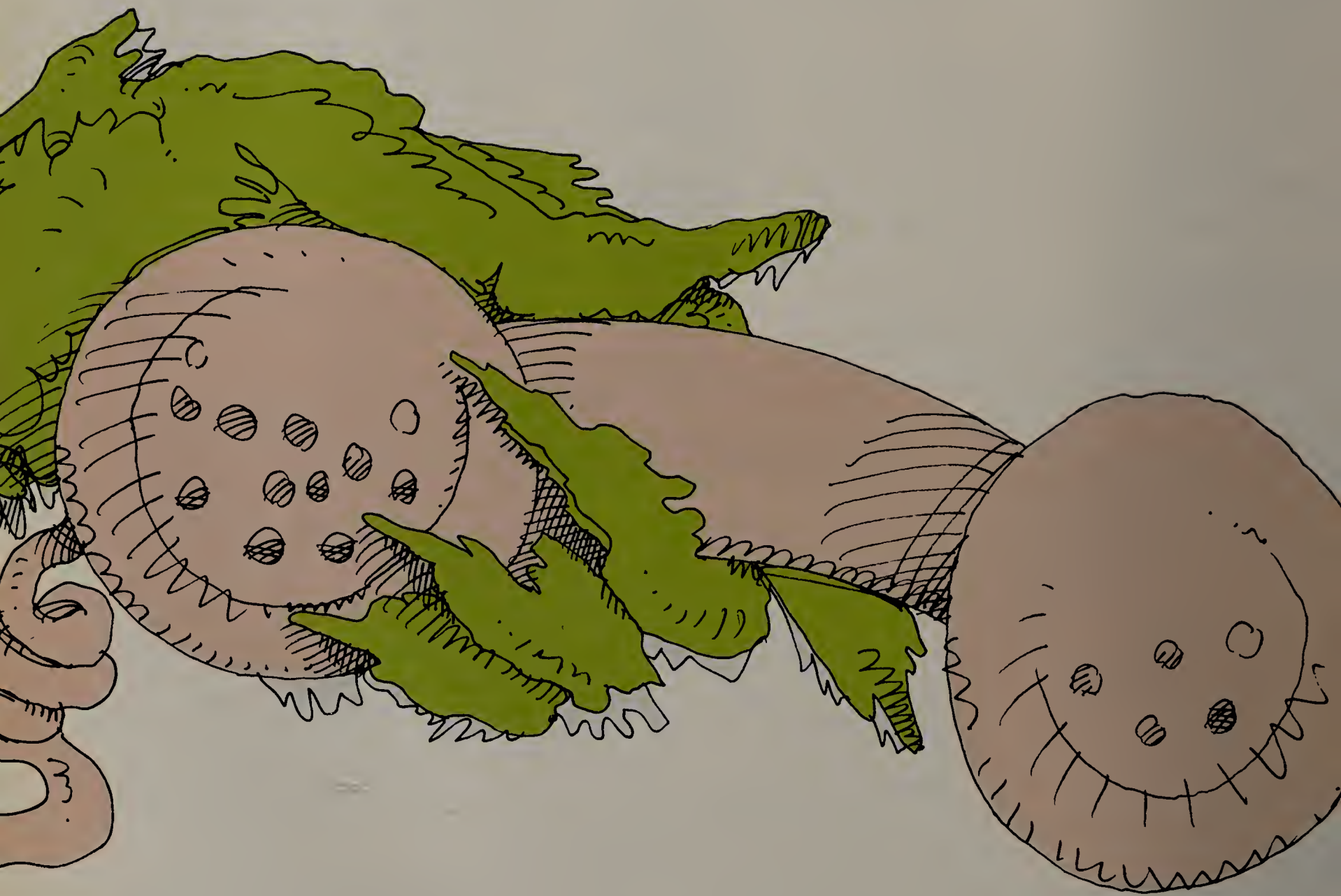
What more could you want in data backup? Not to mention data cartridge's other functions, such as archival storage, data-base distribution, software distribution, transaction logging, image storage, and data acquisition.

Finding the hardware isn't hard.

3M invented data cartridge technology to meet the needs of mass storage. And more and more manufacturers (over 150 at last count) are utilizing it in their designed-in cartridge drives and plug-compatible subsystems.

For a list of manufacturers who can answer your questions about data cartridge technology, turn the page.





(800) 423-3280
(And woe be to the monster.)



voices or instruments, any 8 of which can play simultaneously. With a maximum of two boards per computer, that's good for 16-part harmony. The board includes 240 preset and 96 user-defined sounds, from percussion and reeds to brass and special effects. It's equally suited to studio or performance settings, in concert with a MIDI keyboard.

As well as dropping the original PC, IBM dropped prices on most older systems and options, including the AT model 339, which dropped from \$5295 to \$4595; the XT 286, which fell from \$3395 to \$2810; and the PC Convertible, which celebrated its first birthday with a \$300 price cut to \$1695. IBM, Information Systems Group, 900 King St., Rye Brook, NY 10573; 914/934-4000.



In the Pocket

Office potentates on the run don't often need fingertip access to functions of desktop depth, but they do need breadth—an appointment book, a modest spreadsheet, a word processor, a card file of names and phone numbers.

In ♦ **WordPerfect Executive**, WordPerfect Corporation has distilled three of the company's stalwart products onto a single 720K 3½-inch disk. The \$249 program includes subsets of *WordPerfect*, *PlanPerfect*, and *WordPerfect Library*, packaged with minimum

(continues)

How to keep track of absolutely everything* for \$99.⁹⁵



"Where's that piece of paper with his phone number?"
"You need the key prospect report in 30 MINUTES?!"
"Why am I just finding out we're two weeks behind schedule?"
"What did we agree to last time we talked?"
"What magazine had that article we need?"

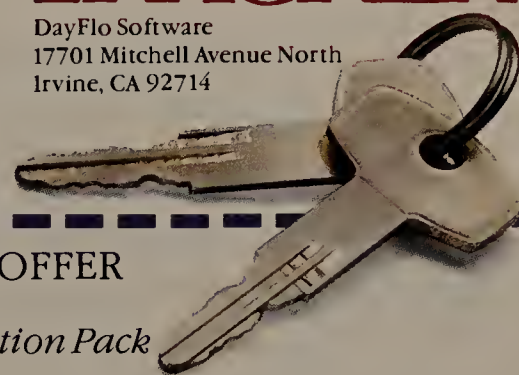
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Sales/Order Information: 1-800-367-5369. In California: 1-714-474-2901.
Not copy protected, 30-day money-back guarantee.

Requires DOS, 384K RAM and hard disk on IBM PC or compatible.
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because it's easy to highlight and change or replace text.

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A	B	C	D	E	F
1	Travel Expenses -- Press PgDn twice for help				Air Fare = A
2					Car Rental = C
3	Date	Description/Where	Cash or Charge	Code	Entertainment = E
4					Food = F
5					Gratuities = G
6					Lodging = L
7					Miscellaneous = M
8					Personal Auto = P
9					Taxi = T
10					
11					Press PgDn twice
12					for help on this
13					worksheet. Press
14					Alt-T to put
15					information in
16					wp document.
17					
18		Totals	0	0	Be sure to enter
19		Minus Advance		<- Advance	any cash advance.
20		Due You or -Due Company	0		
	Calc				
	A1"Travel Expenses -- Press PgDn twice for help				General

WordPerfect Executive, a condensed version of the company's product line, boasts an array of macros and templates that mobile managers can use on the fly.

overlap and maximum convenience. Although geared for laptops, the program is also available on 360K 5¼-inch floppies.

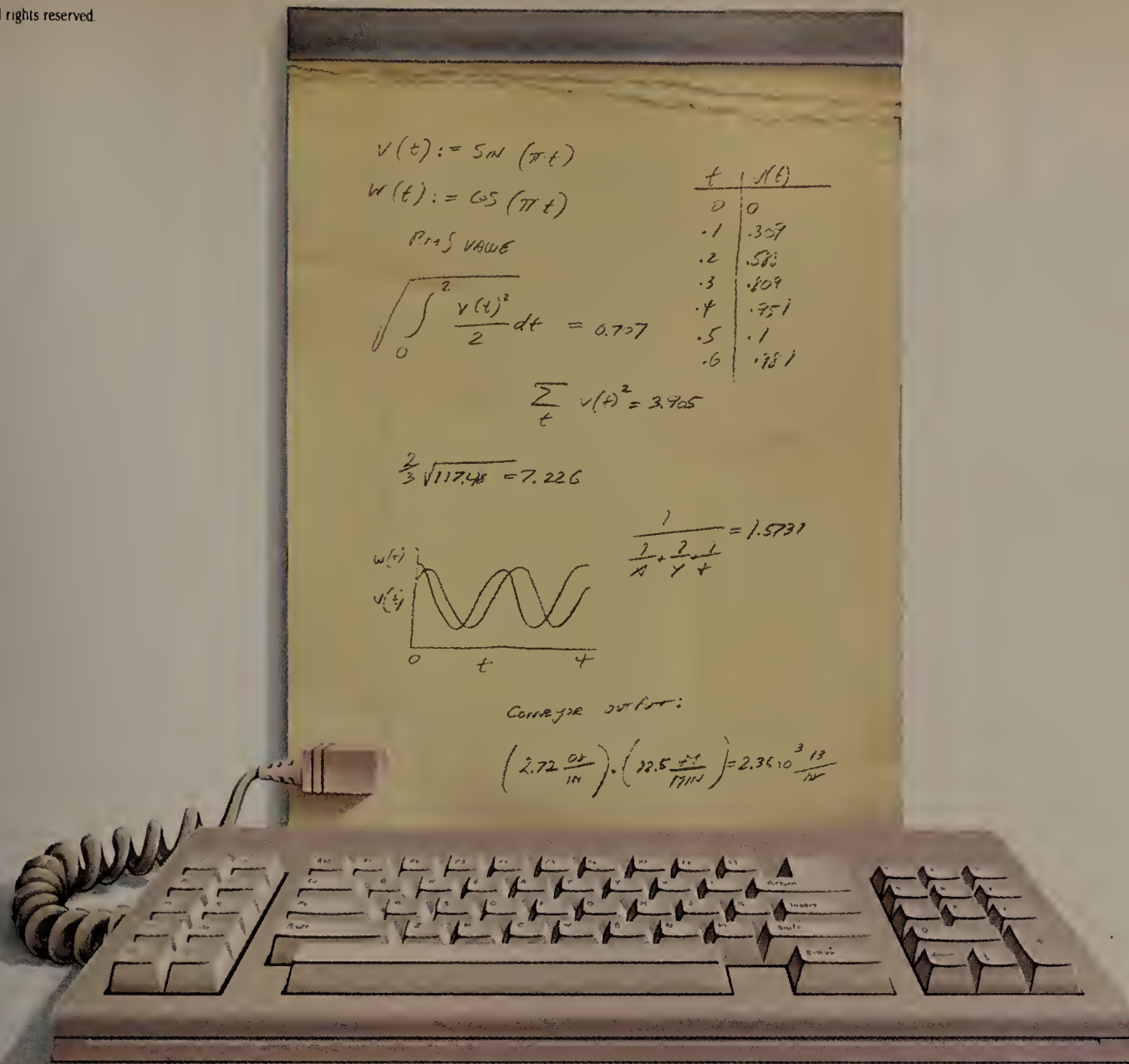
This executive first aid kit consists of a calendar, a calculator, a note card facility, a phone directory, a spreadsheet, a word processor, keyboard macro capability, and a program shell—all documented and, if you're up to speed with any WordPerfect product, familiar to the touch. *WordPerfect Executive* does its stuff mostly in RAM, thereby limiting disk access and preserving battery life. And by shunning redundancy—consolidating print operations, placing the more esoteric calculator functions in the spreadsheet, and so on—the program packs in admirable functionality.

The svelte version of *WordPerfect*, which can handle documents of up to 64K, displays text attributes on screen, and offers such

amenities as merge, forward and reverse searches, and a 50,000-word spelling checker. The spreadsheet, similarly constrained in file size, can display character graphics and export files to 1-2-3, but (unlike the full-size *PlanPerfect*) works with just one worksheet at a time. The six-function calculator includes one memory register and a paper tape, while the note card module acts as a simple file manager, performing searches and one-key sorts.

If versatility is *WordPerfect Executive's* rationale, ease of use is its hallmark. Disk-based macros hasten such operations as cut and paste between applications. You can also tack your own applications—like a dialer—to the shell. Better still, *WordPerfect* is tossing

(continues)



MathCAD™ turns your PC into an electronic scratchpad.

"MathCAD is a real gem of a software package... a program that breaks new ground... the starter of a new software category." *The New York Times*

It's the first numeric software that works like a word processor. The first software of its kind that's not a programming language. Think of it as the first WYSIWYG calculator. For the first time ever, MathCAD lets you do calculations on your PC in real math notation, as simply as on a scratchpad.

"MathCAD is likely to be a trendsetter. Its combination of mathematic power and what-you-see-is-what-you-get interface makes it an excellent tool..." *PC Week*

MathCAD lets you combine equations, graphics and text just like you do on paper. You can input formulas directly and edit equations interactively right on the screen. Just place the cursor anywhere and start typing. MathCAD not only formats your

equations as they're typed, it instantly calculates the results. Sounds simple? It is. In fact, *IEEE Software* writes, "It's fun, and it's much easier to use MathCAD than anything you've ever used before."

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MathCAD is much faster and easier than doing calculations by hand or writing programs. And unlike a calculator, MathCAD lets you see and record every step. You can add text anywhere to support your work. And print or save your entire calculation as an integrated document that anyone can understand.

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"... if I dealt frequently with numbers, I wouldn't wait... to get my copy." *The New York Times*

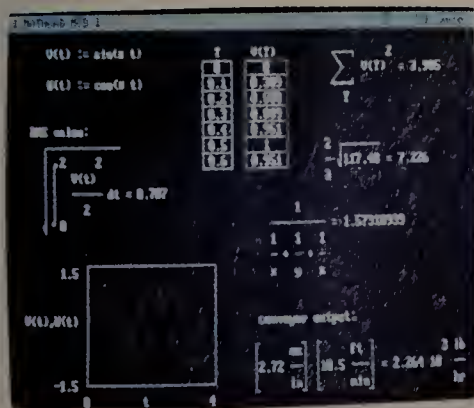
Why spend another minute doing calculations by hand or writing and debugging programs? Put MathCAD to work for you and find out why *PC Magazine* writes, "Warning: it could prove addictive." Once you've tried MathCAD, it's hard to imagine how you ever got along without it. To order MathCAD at just \$249, call us today at:

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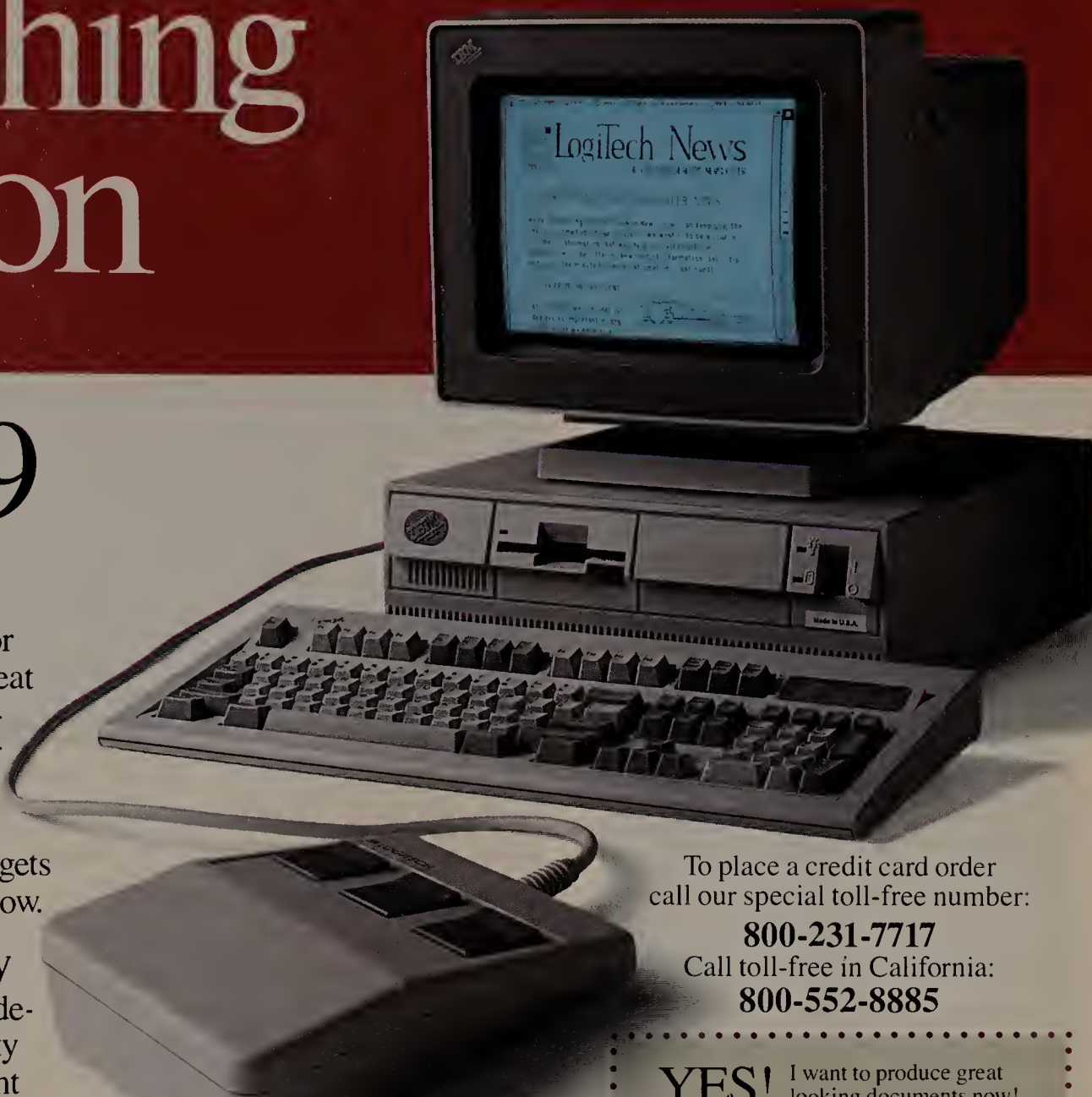
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Logitech News

SUMMER 1987

THE LOGITECH DEALER NEWSLETTER

INTRODUCING LOGITECH DEALER NEWS

We're introducing LOGITECH Dealer News so we can keep you, the Dealer informed about our products. We want it to be a source of timely information that will help you sell LOGITECH products. We'll be offering "new product information, sales tips and up-to-the minute technical

(continued on page 3)

LETTER FROM THE PRESIDENT

At LOGITECH we consider our dealers as important as any other asset we have as a company. This newsletter is one way of keeping in touch with our important dealer customers and providing you with excellent service.

Although this newsletter is important communication, however, it's my belief that the best support we can offer our dealers is a great product. At LOGITECH we strive for what we call "the boring detail effect." By that we mean attention to detail and continuous improvement that makes our product not just a good product but the best product of its kind on the market.

Let me give you an example of how we apply "the boring detail effect" to the LOGITECH Mouse. We've recently introduced a lighter ball and have changed the ball cage to accommodate it. Chances are you won't notice this change or be very excited by it. But our tests indicate that the tracking with this ball is incredibly accurate.

Let's face it - small changes like this are boring! But we believe they're the only means to a great product. That's got to be the best service we can offer our dealers.

Best Regards,
Gary Zappacosta
Pierluigi Zappacosta President



Opto-mechanical LOGITECH Mouse

NEW PRODUCTS

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LOGITECH's new LOGITECH Publisher Mouse Package includes the LOGITECH Serial or Bus Mouse bundled with LOGITECH's OEM version of PFS: First Publisher from Software Publishing.

The LOGITECH product is targeted at business and home users who want a complete desktop publishing solution, including mouse and software, at a low cost. The package is easy to learn and use, making it ideal for first time desktop publishing users. It enables users with little or no page layout experience to create, edit and produce high-impact, dynamic documents without having to learn a complex set of commands and typographical codes.

LOGITECH will be shipping the package to its dealers beginning July 1. Full page advertisements announcing the product will appear in July editions of Byte, PC Magazine and PC World.

Produced on a dot matrix printer. Laser printer support also included.

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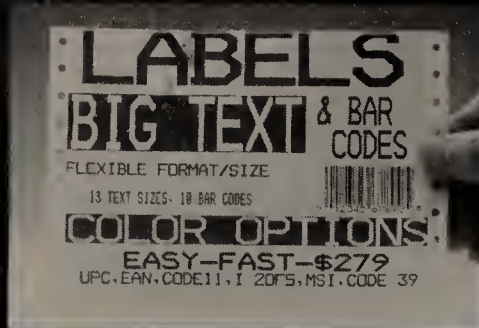
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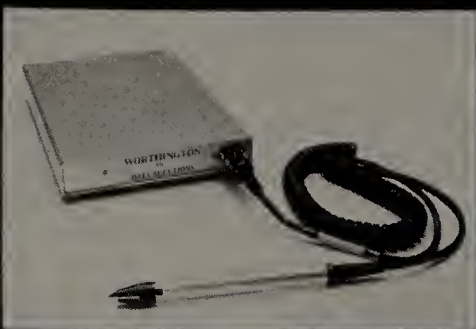
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No, it's not the dBASE Assistant, RapidFile, or Framework—it's MultiMate Advantage II. But give yourself points for recognizing Ashton-Tate's consistent pulldown menu motif.

in a series of templates that includes an income planner and an expense reporter. WordPerfect Corp., 266 W. Center St., Orem, UT 84057; 801/227-4000.



MultiMate, Come Home

After a quiet 18 months—during which *MultiMate* (the program) languished, a casualty of Wang's decline and Ashton-Tate's absorption of Multimate (the company)—that war-horse among word processors is back. ♦ *MultiMate Advantage II* is plainly aimed at managers who put performance on a par with features.

The program has shed some of the trappings that once consigned it to the secretarial pool. It's quicker, it's easier to use, and its weighty assortment of features is now more accessible than ever. Gone is *MultiMate*'s strict page orientation; you can toggle to document mode and manipulate files of up to 128K. In keeping with the current vogue at Ashton-Tate, the \$595 program supports dual interfaces; if you don't care for the standard command structure, you can switch to trusty pulldown menus à la *Framework* and *RapidFile*. *MultiMate* now has an easier time digesting foreign document formats, particularly IBM's DCA.

(continues)

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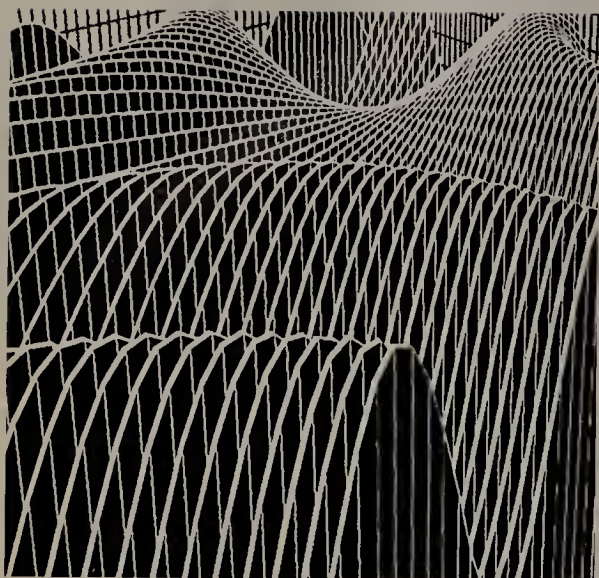
Algol-Logitech Spa 39-2-215-5622

Generic CADD is a trademark of Generic Software. PC Paintbrush is a trademark of ZSoft Corp. PFS: First Publisher is a trademark of Software Publishing Corp.

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ENABLE

Every now and then in the software industry something momentous comes along and changes attitudes overnight. The introduction of Enable 2.0 (with a LAN version, and now available on 3½" disks) promises to be one of those events.



Enable with Perspective.™ Talk about something to get excited about!

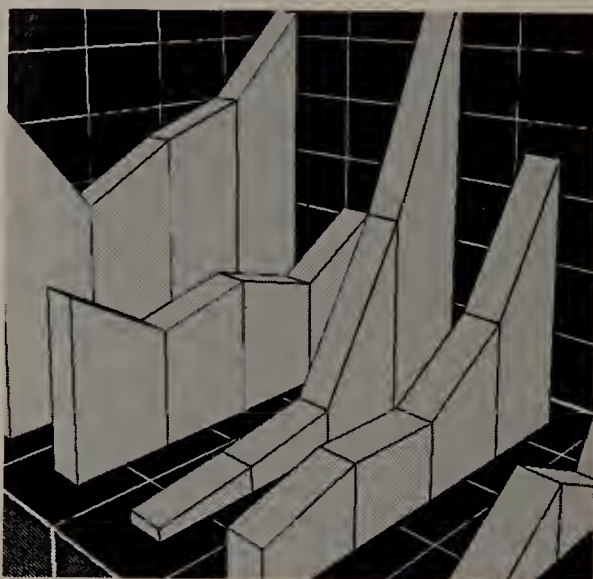
Perspective. *The graphics package.* As *Personal Computing* just wrote, "other products cannot even come close!"

Now, Perspective is fully bundled in Enable 2.0. Which means you can now have an integrated system beyond all others. Word processing, spreadsheet, DBMS, communications and mind-boggling graphics all in one. All offering the power business users need (for confirmation, just read our "Raves" column to your right).

And what Perspective offers is truly awesome:

- 15 2-D and 32 3-D graphs from Enable's spreadsheet or database
- Menu exhibiting all graph types for selection
- Graphs can be resized, and rotated 360 degrees or on any axis for best viewing angle
- 180 choices of shades and patterns for various graph elements
- Automatically converts data from one 2-D chart to another, or from 2-D to 3-D; all graph types compatible.

Note: the six remarkable 3-D graphs you see on these two pages were drawn using Perspective. Which should give you greater perspective on Enable 2.0's vast potential.



100+ new features and enhancements to enhance your productivity.

Not bells and whistles, but meaningful improvements! Across all modules. Brought about by listening to our special User Advisory Board, calls and letters to our Customer Support staff and continuing dialogue with such demanding Enable users as the U.S. Air Force, AT&T and Hughes Aircraft.

Here are some 2.0 enhancement highlights:

- A High-Level Language Interface [Basic, C, Pascal]
- Expanded macro facility
- Enhanced report language
- Enhanced menu generator
- Simplified installation/getting started procedure.
- 80,000 word Proximity/Merriam-Webster Linguibase™ spelling checker
- Row/column sorting on spreadsheets
- Simultaneous display and updating of spreadsheet and graph
- Enlarged Import/Export file compatibility with a wide range of popular software*

And remember, these are improvements to what is already recognized as the most fully featured, most powerful, most customizable, tightly integrated software system in existence.



More and more users are using more and more of Enable.

In the tough, spec-filled world of the Federal Government, Enable is by far the number one selling integrated software.

In the corporate world, after thorough testing and trial usage, dozens upon dozens of Fortune 1000 companies have specified Enable.

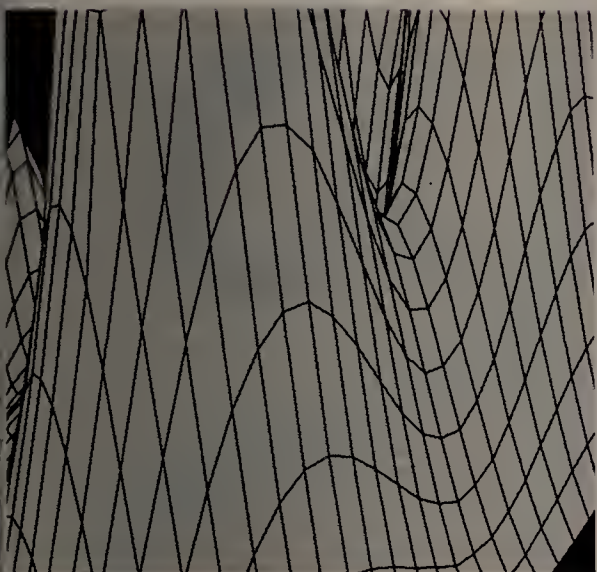
And thousands of smaller companies have come to the same conclusion: Enable has an incredible ability to handle a nearly unlimited range of jobs.

- From the Dow Corning Economic Evaluator, "It's not really a matter of finding ways to use Enable. I haven't found a way *not* to use Enable."
- From a DP Manager for Postal Service HQ, "When people come in for a spreadsheet, we give 'em Enable. Database... we give 'em Enable. Word processing... we give 'em Enable. I simply can't see us out-growing Enable."
- From Xerox, after benchmarking the three leading integrated systems, "[Enable had] the user-friendliness and methodology of integration we were looking for."

As a complete off the shelf product or as a base product on which to build special applications, there just isn't a package on the market that can touch Enable. Especially now that 2.0 is here.

*Compatible with WordStar, MultiMate, EasyWriter, VolksWriter, PeachText, DCA, DIF, ASCII, 1-2-3, VisiCalc, SuperCalc 3, SYLK, dBASE, Condor 3, PC File III.

IN A NEW PERSPECTIVE



One after another, the raves keep flowing in.

Raves! Raves! Raves! Reviewers were lauding Enable even before 2.0.

"A masterpiece of engineering... Enable clearly outdistances its competitors. It is, without a doubt, the first of a new generation of integrated software products."

(PC Products)

"The great thing about Enable is that it gives you all the benefits of a collection of top-notch stand-alone packages—plus integration to boot. It's what Symphony was supposed to be."

(Software News)

"If you are looking for one program to do it all, this is the one!"

(PC Magazine)

"Enable... may be the first program to make you give up your dog-eared WordStar, dBASE, Smartcom and Lotus 1-2-3 disks!"

(Business Software)

"Each of the five modules... has a depth of features and functionality rare in an integrated package..."

(InfoWorld)

Enable 2.0 is bound to generate a whole new file of raves! Including your own.



Enable/LAN. A great new way to make connections.

Enable/LAN gives you the most useful, powerful PC network software on the market.

Consider, a system with all the benefits of Enable 2.0 itself:

- System design, documentation and support making ease of use a reality.
- Word processing, spreadsheet, graphics, DBMS and communications equal to the functionality of the best stand-alones.
- Smooth, simple, fast integration between applications.

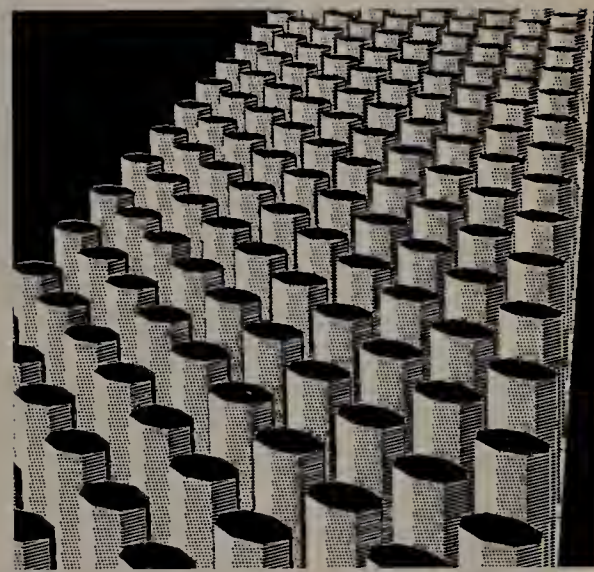
With all the LAN features you'd expect:

- Password protection for all applications.
- File and record locking for all applications.
- Compatibility with all the major networking software.

Plus some unexpected benefits. Just one example: Enable/LAN is import/export compatible with the most popular PC software, meaning you can share files on your network from packages that don't currently offer LAN versions, such as 1-2-3.

To find out more about all you can do with Enable/LAN, land on your favorite dealer's doorstep.

(Available 2nd quarter, 1987)



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The program's merge facility includes a nice segue to *dBASE*, and *MultiMate*'s support for on-screen display of text attributes, a pre-view mode, and more than two dozen fonts makes it suitable company for a page makeup program.

A new "hot start" option enables you to bypass menus and get down to business quickly. Consistency is prime: Operations can be invoked with a single keystroke, and some 300 functions are parked under <F10>. Some of the program's more fearsome features have been tamed: Print specifications can be defined in a table; tabular material can be sorted discretely; the undo buffer claims

20K of RAM, writing any overflow to disk; stock phrases and macros can reside in separate libraries; and six-function math is always available. Text can even be annotated for group editing. *MultiMate Advantage II* is offered in 3½-inch and 5¼-inch formats, and one box fits all. Ashton-Tate, 20101 Hamilton Ave., Torrance, CA 90502-1319; 213/329-8000.



Making Tracks

If your work life occasionally seems like a data base chock-a-block with shards of correspon-

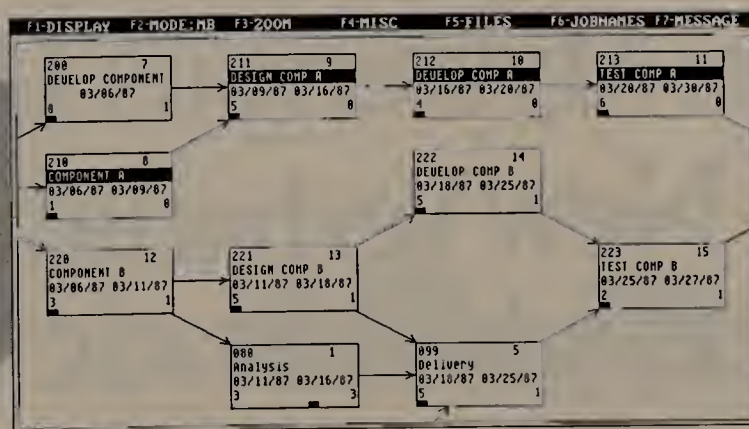
dence, reports, memos, and reminders, Dayflo's ♦ *Tracker* just might deliver you from chaos.

Tracker is neither fish nor fowl, but then, your work doesn't fit neatly into data management or word processing boxes, anyway. The \$149 program treats free-form text much as a traditional data manager treats more structured data, but it ferrets out data by means of user-defined keywords rather than record names. You can marshal up to ten keywords to search documents ranging from a sentence to 32K.

(continues)

PROJECT SCHEDULER NETWORKTM VERSION 2.5

- Work Breakdown Structures
- Gantt Chart
- PERT Chart
- Project Costing
- Project Cost and Schedule Tracking
- Resource Allocation
- Resource Leveling
- Comprehensive Reports



- Interactive Graphics
- Multi-Project Operation
- Sub-Project Integration
- Lead and Lag
- ASAP/ALAP Scheduling
- Required Dates
- Reverse Scheduling
- Negative Slack

What you want is what you get!

Are you tired of PERT Charts that are a maze of crossing lines or that stretch endlessly in a single row of little boxes? With Project Scheduler Network you get the PERT (Network) Chart in the format you want! You construct and view networks at selectable zoom resolutions ranging from project details to the entire network on a single display. Computer-aided drawing tools assist in editing the network diagram to your satisfaction. You can also easily combine and link multiple projects to form larger projects. And sideways printing of the network and full plotter support are standard. Project Scheduler Network helps you define, understand, and communicate project dependencies in a clear, concise, and comprehensive manner. After all, isn't this the purpose of a PERT Chart?



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Problem: Mysterious Data Loss Solution: New Verbatim DataHold Protects when Static Strikes.

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It's DataHold or Data Loss. DataHold is Verbatim's ingenious diskette liner that disperses damaging static charges instantly. Compare DataLife to other popular brands which retain static charges up to four minutes and your choice should be obvious.

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Tracker reports can display text and tables and even handle simple column calculations; the report writer comes with 45 predefined report forms. *Tracker* supports a merge facility, macros, and what Dayflo calls an ad hoc relational structure. Is your desk deluged? Not to worry; a single *Tracker* data base can contain 65,000 records.

For \$39.95, a *Tracker Application Pack* provides two dozen templates for document abstracts, spreadsheets, word processing documents, DOS files, correspondence, and more. *Tracker* also includes a program-switching capability; you can leave it, play with something else, and then pick up

where you left off. *Tracker* requires a minimum of 1MB of free hard disk space. Dayflo, 17701 Mitchell Ave., N. Irvine, CA 92714; 714/474-1364.



The Pac Is Back

It's frequently hard for managers on the go to part with crucial data—or the application that gives the data its context. Tandon Corporation, the disk drive maker that doubles as a systems house, just might have that problem licked. The answer isn't a magnetic cartridge or a Bernoulli-type product;

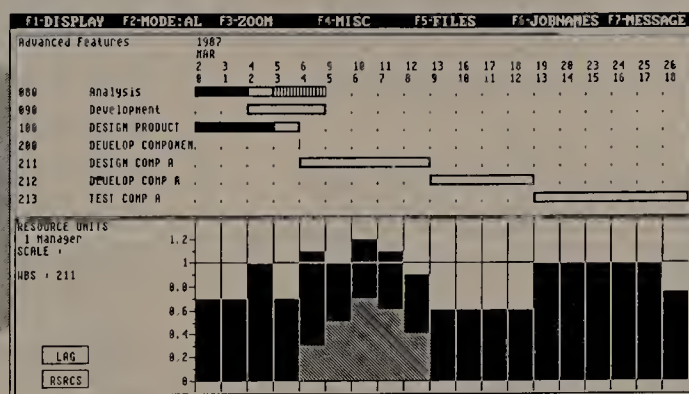
with Tandon's ♦Personal Data Pac, you tote the mechanism as well as the media.

Operating on the premise that it's data, not hardware, that makes the PC personal, Tandon has wrapped a 3½-inch, 40ms 30MB hard disk in a protective plastic shell, done what it could to keep it fast and friendly, and built a base station and a 286 machine around it. The 2½-pound Personal Data Pac itself, roughly the size of a James Clavell novel, reportedly shrugs off abuse and remains impervious to dust and the other effluvia that infest cartridges.

(continues)

PROJECT SCHEDULER NETWORKTM VERSION 2.5

- Work Breakdown Structures
- Gantt Chart
- PERT Chart
- Project Costing
- Project Cost and Schedule Tracking
- Resource Allocation
- Resource Leveling
- Comprehensive Reports



- Interactive Graphics
- Multi-Project Operation
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- Lead and Lag
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- Required Dates
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- Negative Slack

Real world resources for real world problems!

Did you know that most project management software only allows you to spread resources uniformly over the duration of a task? In the real world, however, people and equipment are more often assigned at specific points in a task. Project Scheduler Network provides these real world capabilities for your real world problems. You can assign resources at any point in a task and for any duration. You can make fractional assignments. And you can analyze resource allocations at a single project or multiple project level. Resource leveling is supported in two modes: automatic and interactive. Automatic leveling adjusts your schedule to fit tasks within defined resource limits every time the critical path is calculated. Interactive leveling provides unmatched visibility and control of resource allocations and task scheduling via an industry unique graphics display that shows Gantt schedules versus resource loading histograms.



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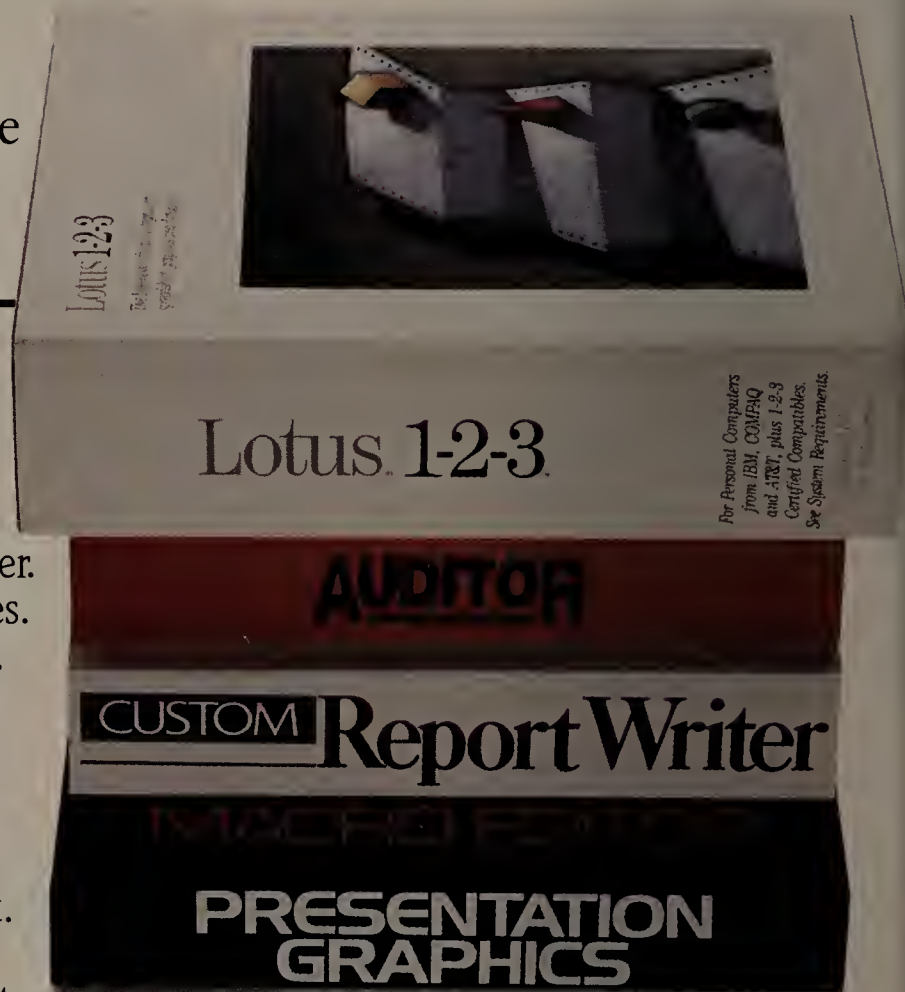
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Professional Plan has powerful row and column formulas that can replace a whole series of individual cell formulas. When you change data, Professional Plan's advanced affected-cell recalculation updates only those cells for big time savings. It's simple to consolidate data from multiple worksheets, too. Professional Plan even has a unique "Goal Seeking" feature that automatically solves for a goal that you have defined.

Advanced Macro Capabilities.

Professional Plan's powerful programming

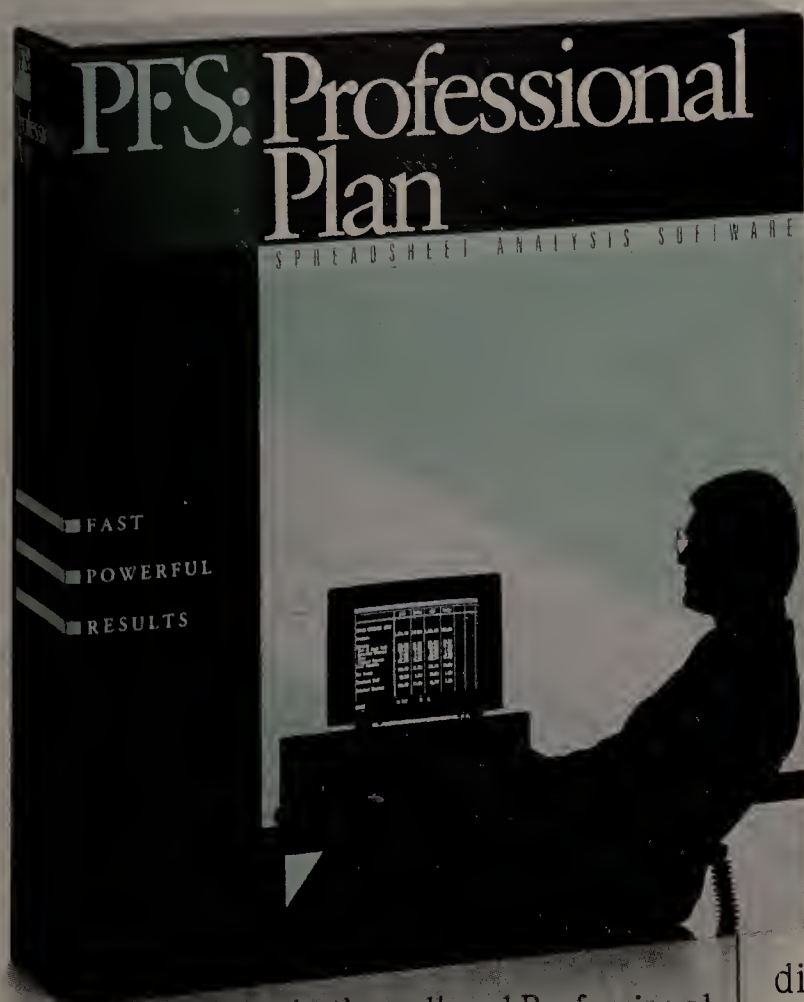


language takes macros to a new level. You can type in a macro, or let Professional Plan record your keystrokes. Editing becomes easy with the built-in macro editor. You can also link macros to multiple spreadsheets with the macro library feature. If you make a mistake, Professional Plan's extensive error handling capabilities tell you what the error is and where it is located.

Built-In Auditor.

Unlike other auditing packages, Professional Plan's interactive auditor lets you audit, edit, and print all your formulas directly alongside your data. Now, you can see at a glance if your formulas are correct. If necessary, you can change a formula

Professional Plan.



in the cell and Professional Plan instantly recalculates while still in the audit mode.

Custom Report Writing.

Professional Plan gives you an amazing choice of built-in report writing options with the powerful "View" function. More than a simple "Hide/Restore" feature, Professional Plan actually lets you display, sort and print any set of rows and columns—contiguous or not. For example, you can view and print only columns 2, 5 and 12-20 of your spreadsheet. Then, design a page layout with custom headers and footers—even custom page breaks—for complete flexibility.

PFS: Professional Plan.

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PFS: Plan owners call 1-800-255-5550 for upgrade information.

Presentation Quality Graphics.

Professional Plan makes it easy to create beautiful presentation quality graphics. In fact, Professional Plan offers the same superb output found in Harvard Presentation Graphics for your analytical graphs. Choose from over 13 different graph types with multiple type styles and pitch options. Then, print or plot your graphs directly with a keystroke—without a separate Print Disk utility.

Easy as a Word Processor.

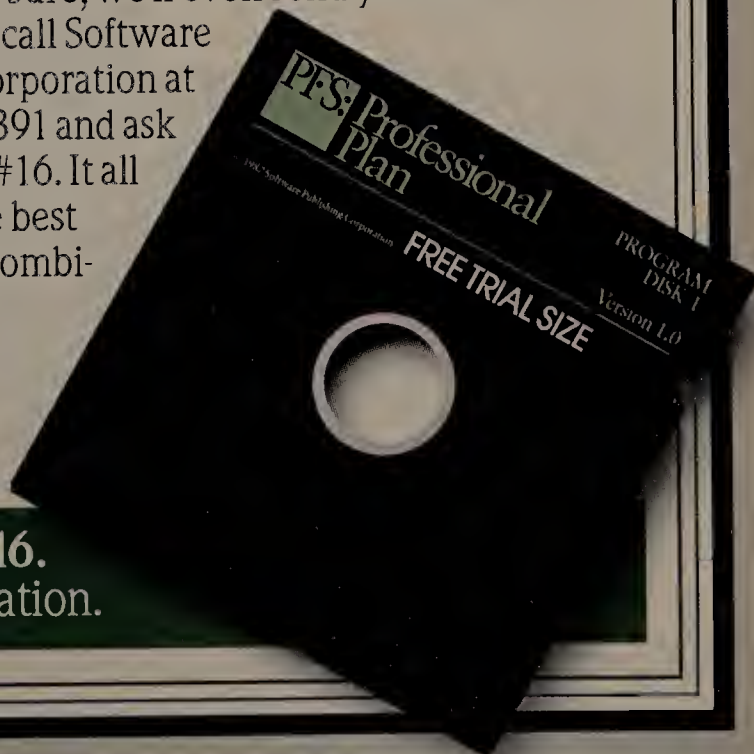
If you can use a word processor, you can use Professional Plan. Enter plain English formulas and data directly to a cell—no separate editing key is required. Pull down menus and extensive context-sensitive "Help Screens" make getting started exceptionally quick and easy.

Part of Your Total Office Solution.

Professional Plan was designed from the beginning to run on a network. Data can be exported directly to PFS: Professional Write for combined text, spreadsheet and graphics output. And, you can both import and export data from mainframe or other products through ASCII.

Free Trial Size.

You know you can do a lot with 1-2-3, but we think you can do even more with Professional Plan. We're so sure, we'll even send you a free trial size. Just call Software Publishing Corporation at 1-408-848-4391 and ask for Operator #16. It all adds up to the best spreadsheet combination yet.



Tandon is treating the \$395 Data Pac as both a distribution and a storage medium. Liberated from the \$495 host AD-Pac 2 subsystem—which contains two slots called Data Racs—the unit serves as a delivery vehicle for software companies, libraries, and desktop publishers, and also as portable storage and backup for those who rely on massive data bases and vertical applications.

Tandon and codeveloper Xerox have seemingly done everything possible to allay fears of data loss: A proprietary mechanism locks the read/write head above the plat-

ter. Combined with four internal shock mounts, that technology enables the unit to withstand 250 g's—or worse, the slings and arrows of the U.S. Postal Service. A 128K disk cache coupled with midtrack disk directories keeps access times quick. The Personal Data Pac uses RLL (run length limited) encoding to pack data at maximum density. Tandon Corp., 805 Science Dr., Moorpark, CA 93021; 805/378-6081.

(continues)



Home berth for Tandon's Personal Data Pac is a dual-compartment peripheral called the Data Rac.

ALS 18C Financial Consultant™

The ALS 18C Financial Consultant is a collection of powerful financial problem solving tools for calculating:

- Loan Amortization
- Depreciation
- Break Even Analysis
- Simple Interest
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- Leasing
- Internal Rate of Return
- Investment Analysis
- Metric Conversion
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- Discounted Cash Flow
- Savings & Annuities
- Real Estate
- Dates
- IRA
- Bonds
- Statistics
- Scientific

The ALS 18C computes in standard or reverse polish notation and, best of all, the ALS 18C is **memory-resident** so it's always there when you need it, even while you're using another program.

Real Estate analyzes purchase/sale & displays an amortization table:

CURRENT HOME:	
Sale Price.....	145,000.00
Real Estate fees.....	6.00%
Closing Costs.....	1,500.00
Existing Mortgage.....	80,000.00
Net Proceeds.....	54,800.00
NEW HOME:	
Purchase Price....	185,000.00
Loan Points.....	2.5
Closing Costs.....	2,500.00
Cash Down Payment	40,000.00
Total Down Payment	94,800.00
A. Loan Amount.....	95,017.50
B. Annual interest..	11.37%
Periods per year..	12.00
D. Number of years..	30.00
E. Payment Amount..	\$1,136.07
F. Balloon payment..	0.00
Minimum payment..	900.69
Loan %.....	51.36%
Annual Insurance..	600.00
Annual Taxes.....	1,850.00
Total Payment.....	1,136.07

789/

456*

123-

0.=+

C to clear all J to clear entry

RIGHTARROW to Display Table

 LEFTARROW to Print Table

Printer is LPT1

Calculate the number, then press ENTER.

Press ESC to return to previous menu.

See your dealer or send \$89.95 to ALS. CA res. add sales tax.

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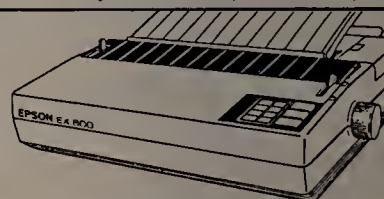
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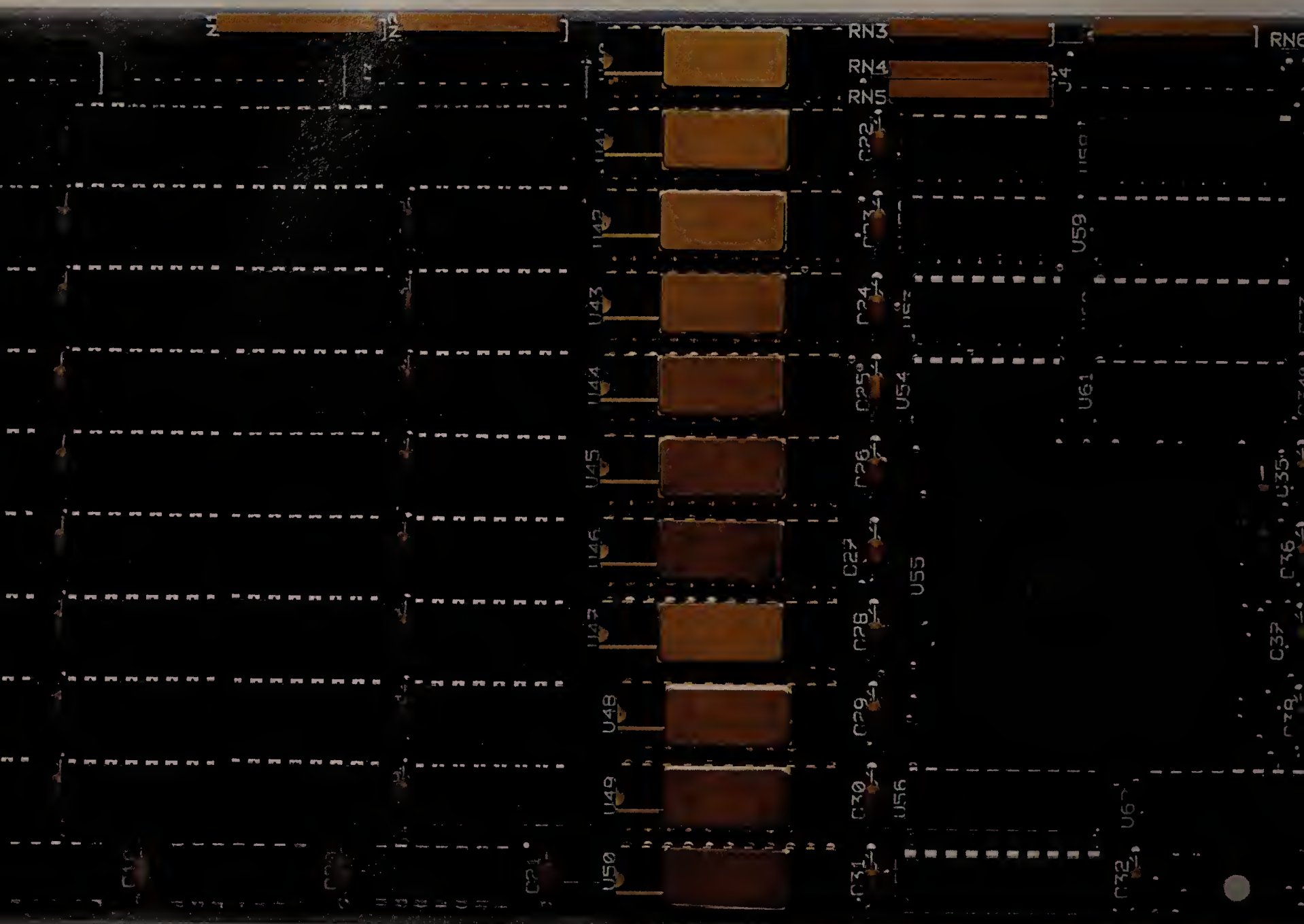
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Christopher O'Malley
PERSONAL COMPUTING, April '86

PC

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Winn L. Rosch, PC MAGAZINE, MAY 27, 1986

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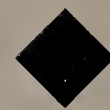
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501 Second Street, Suite 600

San Francisco, CA 94107

No telephone calls please.

Product Outlook



The 286 Cup Runneth Over

Users who crave speed but want to keep costs down must feel vindicated; dollar for dollar, 80286-based machines now clearly offer the best price/performance combination in personal computing. Two robust 286 families, both descended from top-notch stock, are underscoring that fact.

Compaq has thrown its weight behind the 12-MHz clock, upgrading the entire ♦Deskpro 286 clan and consigning 8-MHz units to history. Claiming a 50 percent performance edge over the AT, Compaq's new line features user-selectable 8-MHz/12-MHz clock speed (and a knack for sensing what a given application wants), plus 8-MHz expansion buses that maintain compatibility with third-party hardware. The Deskpros also offer 30ms hard drives of 20MB, 40MB, and 70MB; an optional 40MB tape unit; and, for the first time, a choice of display configurations headed by Compaq's EGA and enhanced graphics monitor. The Model 20, with 640K and a 20MB hard drive, retails for \$3999. Sad to say, there is no upgrade path for 8-MHz machines. Compaq Computer, 20555 FM 149, Houston, TX 77070; 713/370-0670.

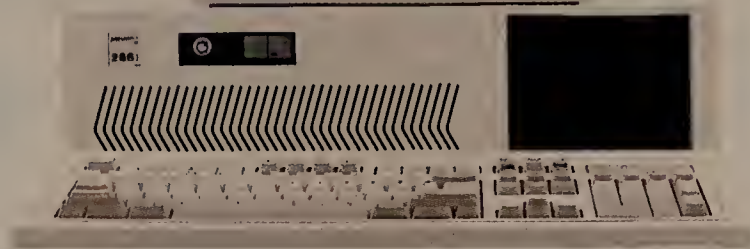
If you lean toward the price rather than the pure performance side of the equation, NEC may be

(continues)

THE ADVANTAGE



ENHANCED



Kaypro Corporation — electronics innovator since 1952 — has made a good thing even better. The KAYPRO 286i Model C now features a 40-MB hard drive and the 101-key AT-style keyboard. With the latest standard feature enhancements, the KAYPRO 286i is the smartest choice in advanced computer technology.

Advanced.

The heart of the KAYPRO 286i is the 80286 microprocessor — with a processing rate of 10 MHz and a 640-kilobyte RAM. The perfect match for today's high productivity software.

And Enhanced.

The KAYPRO 286i Model C has

a 1.2-MB floppy disk drive, plus a hard disk with 40 MB of storage. The KAYPRO 286i AT-style keyboard features the new 101-key layout with separate cursor control, numeric keypad, and 12 programmable function keys.

Perhaps the nicest surprise about the KAYPRO 286i/C is the suggested retail price of \$2995.

You won't find distinctive metal construction, 10-MHz processing, and free name-brand software that includes WordStar Professional Release 4 in any other AT-type computer. Other company's extras are Kaypro standard features.

KAYPRO
Lease-Link

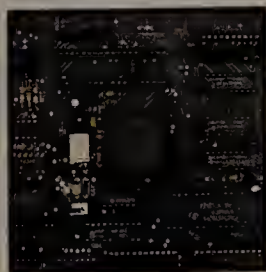
Kaypro's Commercial Leasing

KAYPRO
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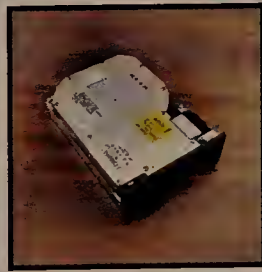


Kaypro's Revolving Charge Plan

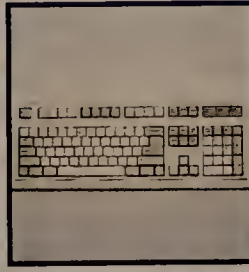
The KAYPRO 286i Model C features...



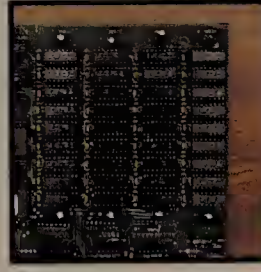
80286, 10-MHz Microprocessor.



An internal hard disk drive with 40 MB of storage.



Enhanced 101-key IBM PC/AT-style keyboard with security keylock.



A 640-KB RAM, expandable to 15 MB.



Bundled software includes WordStar Professional Release 4.

Trademarks: 286i, Kaypro Corporation; IBM, AT International Business Machines; WordStar Professional Release 4, MicroPro International.



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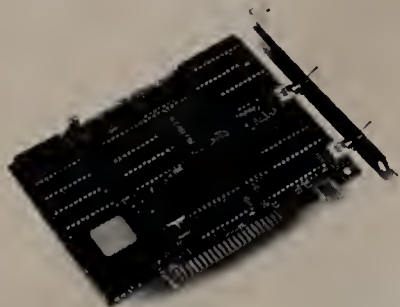
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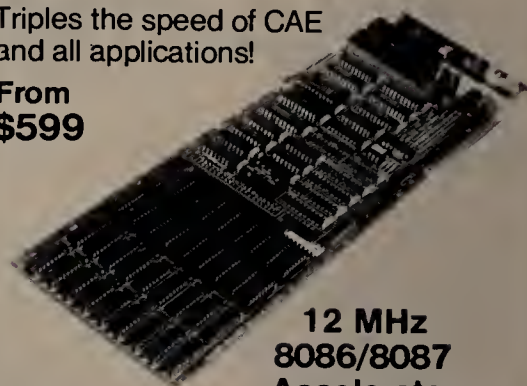
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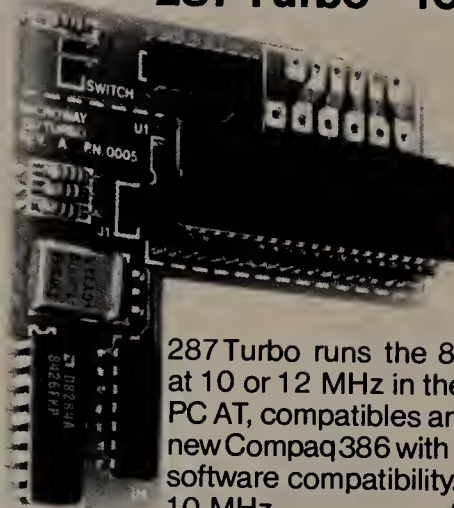
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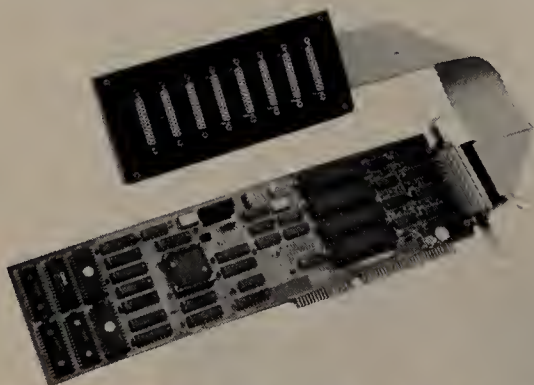
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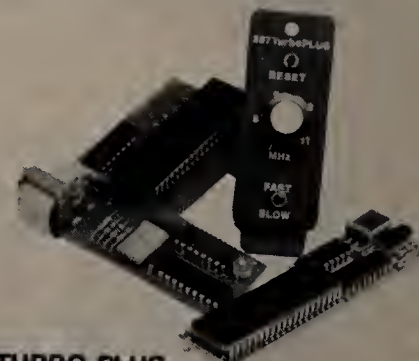
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Everyone's Asking How Can We Do It?

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Q. How can we afford to sell Peachtree Complete at such a low price?

A. We've reduced our costs without reducing product features. Peachtree Complete has been repackaged into one set that includes more thorough and better organized user instructions. We've also streamlined order processing and reduced overhead. It is faster and easier to buy our product.

Peachtree has long been the first name in accounting software, so we've had time to completely amortize our original development costs plus make over 100 major additions. These enhancements include multi-company capability, menu driven installation and removal of copy protection. Consequently, you're getting a proven product at a better price.

We also "unbundled" support (so you only pay for what you need when calling our toll-free technical support hotline) and established a network of local dealers to serve as Independent Peachtree Support Centers.

Q. What does Peachtree Complete include?

A. 1. Eight Integrated Software Modules:

- General Ledger • Accounts Receivable • Sales Invoicing • Accounts Payable
- Inventory Control • Fixed Assets • Job Cost • Payroll

2. An Installation Guide to lead you step by step through our simple installation procedure.

3. An Accounting Primer, written for Peachtree users by an industry expert, to explain accounting concepts.

4. Tutorials on each module with sample data to make learning easier.

5. A complete Reference Library with detailed instructions in plain English on all software functions.

Q. Is Peachtree Complete really the same product that used to sell for \$600 per module?

A. Peachtree Complete is basically the same accounting system that both Peachtree and IBM sold for about \$5,000 but with substantial improvements in function and presentation.

With more than 150,000 users to its credit, Peachtree Complete has been the PC World Class Winner in its category for two of the last three years.

Q. What's the difference between Peachtree Complete and the \$69.95 systems?

A. Peachtree's system is called Complete because it contains the eight most needed accounting packages (including payroll) and all reference materials for one price. Remember, it was designed as a \$4,800

accounting software system.

The \$69.95 systems, on the other hand, are incomplete. They were designed to sell for \$69.95 and require the purchase of additional modules to be comparable—payroll, \$49.95 more; tutorials, \$19.95 each; etc. Everything is a la carte.

Q. How soon will I outgrow the system?

A. Peachtree Complete handles revenues up to \$21,000,000, so only the largest companies will outgrow the system. The ability to process data for an unlimited number of companies is one of the system's biggest selling points.

An optional multi-user module soon to be available allows Peachtree Complete to be installed in a Local Area Network. And Peachtree Data Query, for just \$199, lets you quickly transfer your accounting data

to many popular spreadsheets and databases, as well as produce custom reports.

Q. What if I'm not satisfied with Peachtree Complete?

A. When you purchase Peachtree Complete directly from Peachtree Software, you're protected with a **30-Day Money Back Guarantee** (an option even the most expensive accounting products don't offer).

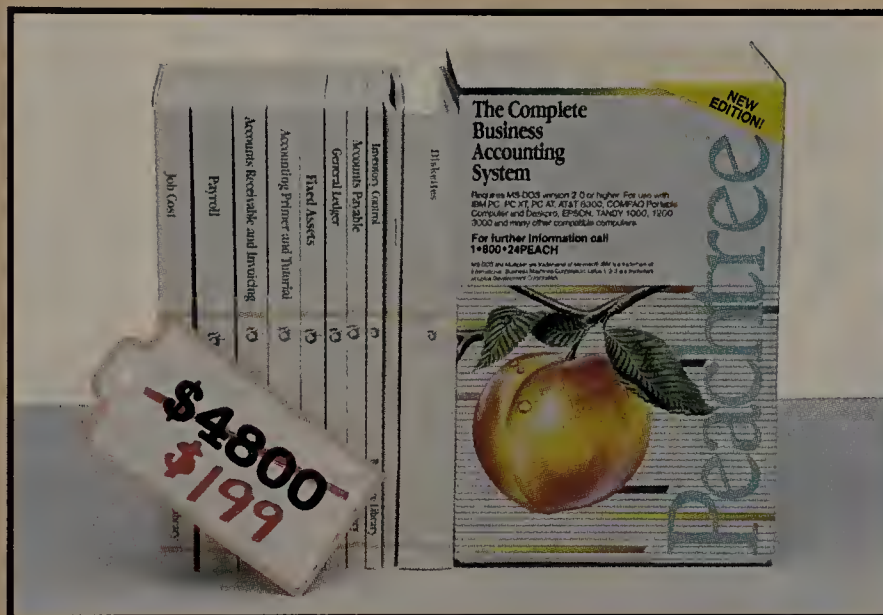
If you're not satisfied, simply return the complete product in saleable condition within 30 days and your purchase price will be promptly refunded.*

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—Richard Morochove, *InfoWorld* Review Board.



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- Supports average, last purchase and standard

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- Automatic pricing with 3 levels for each item

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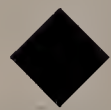
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the vendor for you. The firm has retooled its APC IV line, releasing two affordable yet formidable machines. At \$1995, the 8-MHz ♦PowerMate 1 cuts a smallish figure but includes 640K, six expansion slots, serial and parallel ports, and a single 1.2MB floppy disk drive. The unit is built to handle a 3½-inch floppy drive and can house up to 80MB of hard disk storage. The heftier ♦PowerMate 2, priced at \$2595, cruises at 8 or 10 MHz. RAM is expandable to 10.8MB, and the system accommodates five mass storage devices. Both units look marvelous with the NEC MultiSync and NEC’s EGA-compatible Advanced Graphics Board. At press time, a NEC spokesperson said, tariffs notwithstanding, prices of the systems would not change. NEC Information Systems, 1414 Massachusetts Ave., Boxborough, MA 01719; 617/264-8000.



Write Down to the Wire

In an effort to match the ways in which people truly work, application genres are regularly blended—occasionally with results befitting Jackson Pollock. If you spend more than a few ticks of the clock on line, however, the most sensible (and overdue) pairing may be word processing and communications.

Recognizing that on-line editing within most E-mail services is an exercise in hostility, R & S Micro Services developed ♦*TeleWriter II*, a \$129 word processor you can

use on line or off. You can activate the program’s communications facilities from within the editor, unleashing prefab scripts for CompuServe, MCI, The Source, EasyLink, Dialog, Dow Jones News/Retrieval, and a host of others. Scripts sign on, check for mail, pull it down or send it along, and save it or print it. With *TeleWriter*’s “relaxed XMODEM” feature, you can exchange binary files through time-sharing services and send and receive telexes as well. The program delivers respectable *MultiMate*-like editing functions—notably, search and replace, column math, name and address sorting, split-screen editing of multiple documents, background printing, and microjustification. R & S Micro Services, 2500 39th Ave. NE, Minneapolis, MN 55421; 800/328-6400.



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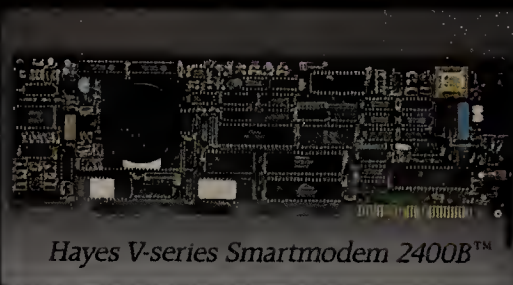
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Query Words: KEYWORDS, SEARCH PHRASES OR COMMENTS CAN GO HERE _____

Operator: [DEM] YOUR NAME IS HERE _____
Author: [DEM] AUTHOR IS HERE _____
Recipient: [SALES] SALES TEAM _____
Docmt Type: [S_1] SPREADSHEET _____
Department: [MAN] MANAGEMENT _____

Program: [LOTUS 1-2-3] DOS File: <SALES02M WKS>
Volume: SYS Location: S:\LOTUS\SHARED0C
Created: 01/11/87 Last In: _____ Archival: 03/11/87

▶ To LOOK UP IDs type in
▶ To FIND document type

HELP	F1	F2	PREV
SUPERFIND	F3	F6	DELE
GO INTO	F7	F8	UPDA
CLEAR SCREEN	F9	F10	SAVE

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next field

LANscape removes the mystery from network document management with a comprehensive, fill-in-the-blanks document profile, complete with keywords and file location data.

or magnify them to 1500 percent. According to HP, scanning and storing a full-page image at maximum resolution takes about 20 seconds. The company is packaging DOS and *Microsoft Windows* versions of its *Scanning Gallery*, a program that simplifies the importing of images into *PageMaker*, *Harvard Professional Publisher*, and *Spellbinder*. The scanner outputs directly to *PageMaker*, *Microsoft Paint*, and *PC Paintbrush* and supports 16 shades of gray. The HP software and scanner interface board list for \$495. Hewlett-Packard, 1820 Embarcadero Rd., Palo Alto, CA 94023; 800/367-4772.

◆◆◆◆◆

Imagine that local area networks and their mainstay applications were affordable and compatible. Even then, LANs would probably still defy comprehension—which is precisely where Ncompass Software's *LANscape* pipes up. *LANscape*, sculpted for 3Com and Novell networks, is a welcome anomaly: a network-domestication tool that strives to serve both experienced administrators and network novices. It does so by intervening between the application and the network operating system, establishing document profiles that can be used to retrieve programs and files. The approach rejects cryptic commands in favor of

(continues)

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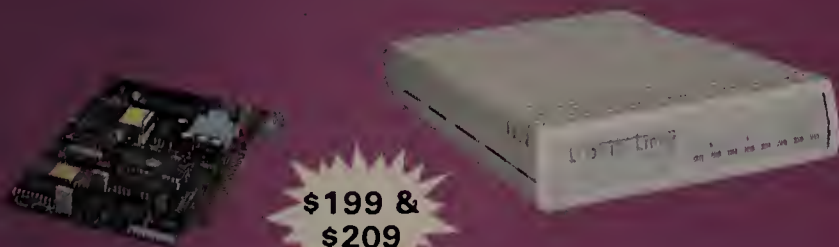
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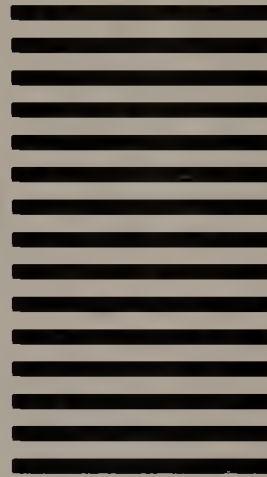
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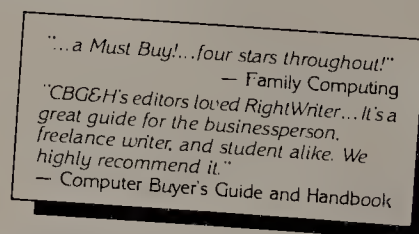


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Number Nine Computer Corporation's Pepper SGT board may extricate you from the horns of your graphics dilemma, particularly if your needs are eclectic. The board couples the programmability of the Texas Instruments (TI) 34010 graphics coprocessor with the speed and hardware windowing of Intel's 82786 graphics chip. The result is a \$995 add-on for virtually all reasons and resolutions. Pepper SGT is equipped with 1MB of RAM (which, with a companion board, can grow to 4MB) and quickly displays images in 16 colors at 1280 by 480 pixels. With a 16-by-19-pixel character box and a monochrome resolution of 1280 by 350, the SGT should satisfy the exacting demands of desktop publishers. The board drives the NEC MultiSync and provides full MDA and CGA compatibility; EGA support entails a link, by cable, to an installed EGA. As if the TI chip's inherent programmability weren't enough, the board also comes

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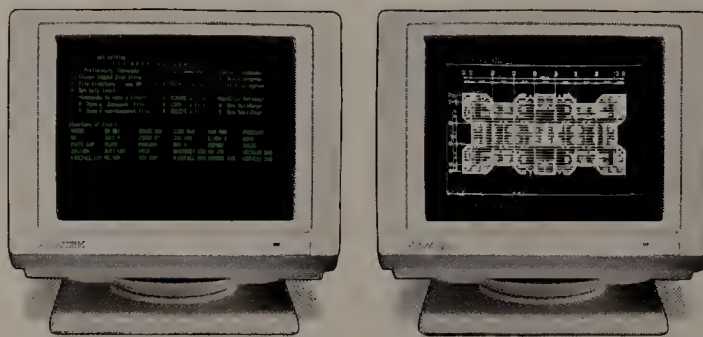
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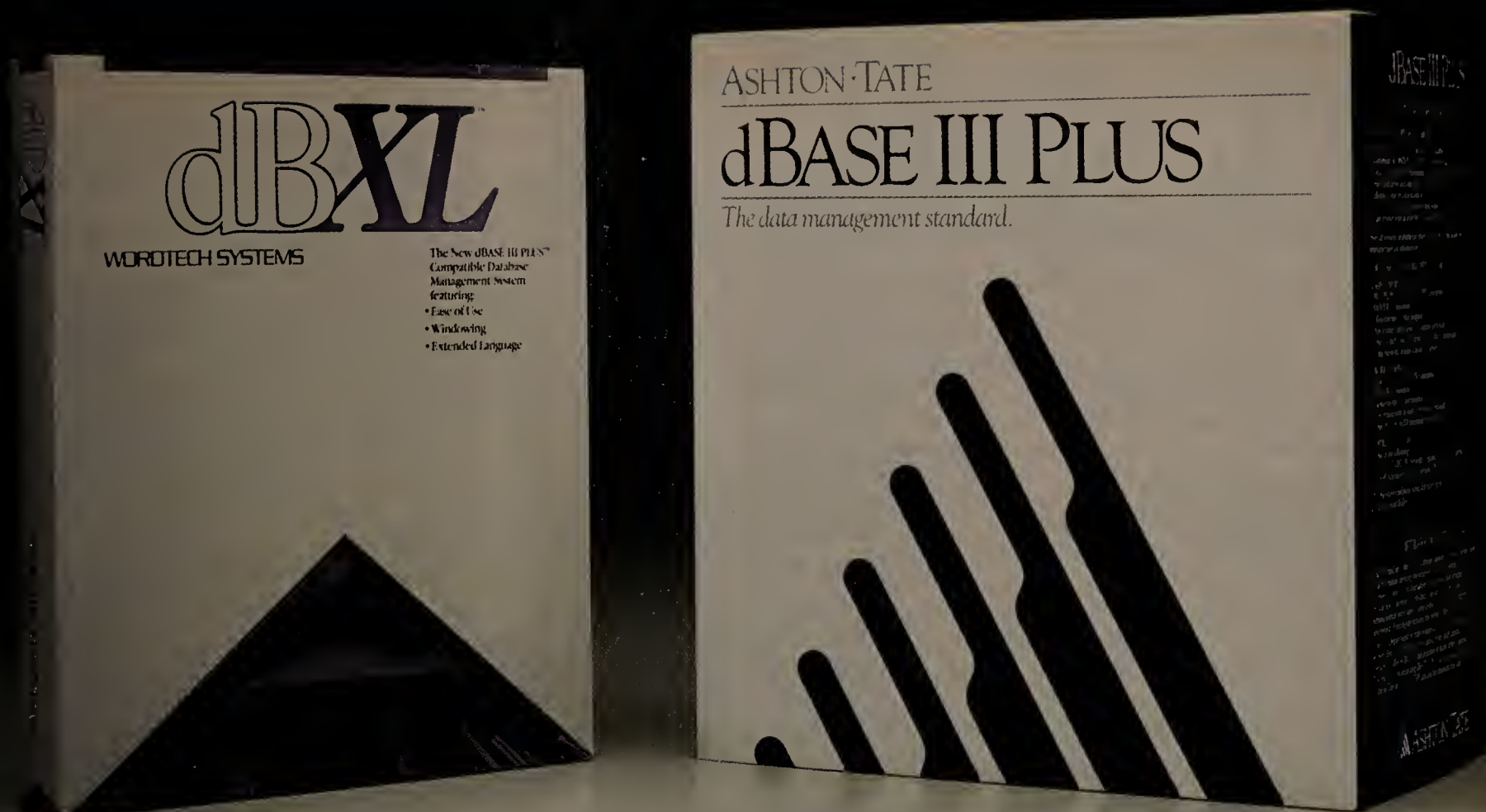
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with NNIOs, the Number Nine Intelligent Operating System, which includes a complement of ROM-based graphics primitives. Number Nine Computer Corp., 725 Concord Ave., Cambridge, MA 02138; 617/492-0999.



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guaranteed the Breakthru 286 board to be literally the most advanced, fastest, most feature-rich board available. The runaway success it has enjoyed truly proved that assertion. Now we go ourselves one better with the Breakthru 286-12. This new board has the clock speed cranked up from 8 to 12 MHz for speeds up to 10.2 times faster than an IBM PC. It is 50% faster than an 8MHz IBM AT, and up to a whopping 1,000% faster than a regular PC.

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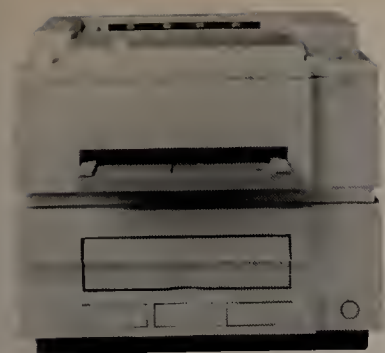
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graphics-capable monochrome monitor, an 80387 socket, a 65ms 20MB hard disk, a 360K floppy, a 220-watt power supply, an 84-key keyboard with LEDs, serial and parallel ports, and six expansion slots, one of which is 32-bit. The PC Discount warranty covers parts and labor for one year. PC Discount, 2100 Travis #630, Houston, TX 77002; 713/655-9047.



Executives for whom speech making is about as welcome as a class action suit can call on *Thoughtline*, a black box from Xpercom smart enough to ask the right questions. Conceived by a former speech writer who has put words in the mouths of IBM, AT&T, and Xerox brass, the program uses pattern matching and word substitution to engage you in what Xpercom calls a Socratic dialogue. It thus helps shape the scope of the address, target the audience, and identify the goals of the speech. *Thoughtline* wraps up its sparring with a round of follow-up questions and an outline. Priced at \$295, the program—written in Golden Common LISP—requires 640K and a hard disk; one-liners not included. Xpercom, 3605 Luallen, Carrollton, TX 75007; 214/922-2017. ●

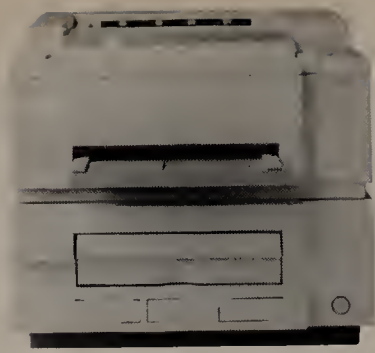


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LaserTEN, interface, font cartridge, EasyLaser™ utility software and WordPerfect® software. Suggested retail value: \$3780

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HP LASERJET EMULATION BUNDLE, \$2795.[†]

LaserTEN, interface and font cartridge. HP's LaserJet suggested retail price: \$2995

HP LASERJET PLUS EMULATION BUNDLE, \$3395.[†]

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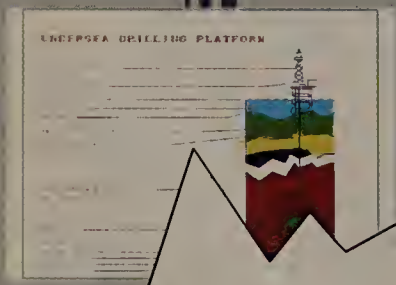
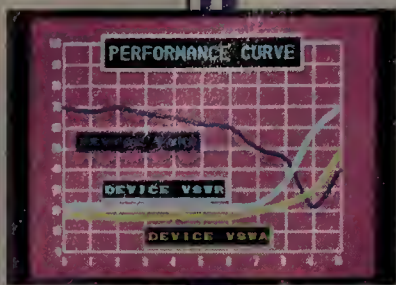
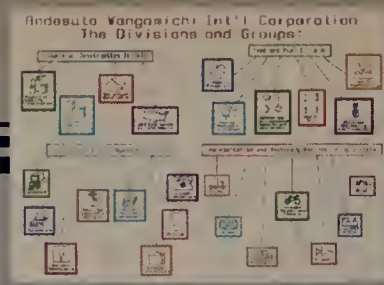
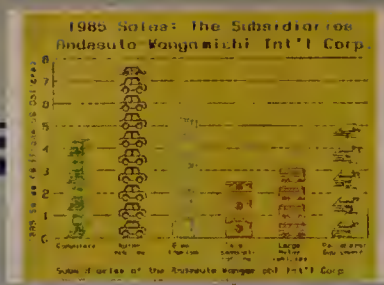
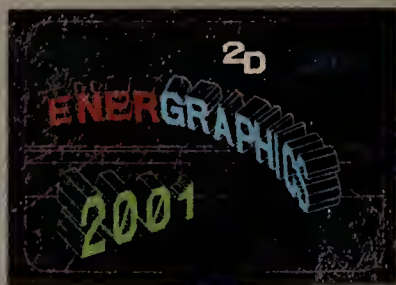
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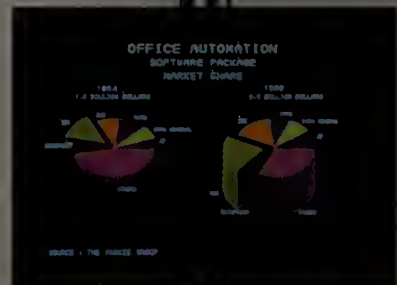
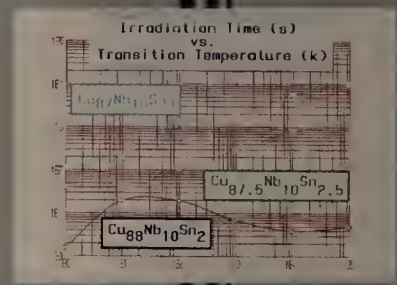
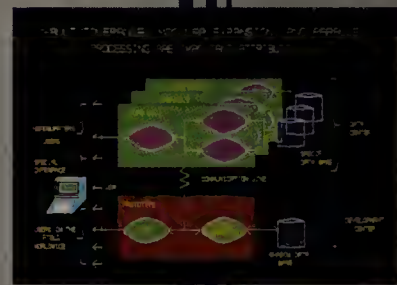


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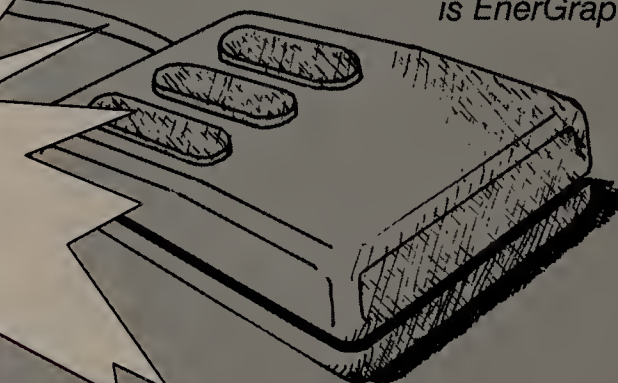
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From the Hardware Shelf

PC World offers first impressions of recent hardware releases

Discover NEC's souped-up laptop, a solid AT clone, a 30MB hard disk on a board, and the smartest modem of them all.

Edited by Eric Knorr

NEC MultiSpeed 8086-compatible laptop computer

Pros: Fast clock speed, good keyboard layout, low price

Cons: Fragile screen hinge

NEC Home Electronics
1255 Michael Dr.
Wood Dale, IL 60191-1094
312/860-9500

List price: \$1995, 300/1200-bps internal modem \$399, RS-232C reverse (null) cable \$49, external transfer cable kit \$99, car battery cable \$20, carrying case \$99

The MultiSpeed may not herald the arrival of Alan Kay's notepad-size supercomputer, but it brings that event a step closer. With 640K, a Supertwist LCD screen, and the fastest itinerant CPU in

the industry—a 9.54-MHz demon—the \$1995 MultiSpeed has the right stuff for airborne, motel-room, or seaside computing.

Weighing 11 pounds and measuring 14 by 3¼ by 12½ inches, the MultiSpeed isn't the smallest of laptops, but its healthy size affords ample keyboard dividends. Its width grants space for keyboard extras like a separate numeric keypad and two rows of function keys conveniently housed at the keyboard's leftmost edge. LEDs for <NumLock> and <CapsLock> keys (as well as access and low-battery lights) keep you in the know. In addition, a dedicated Help hot key pulls down RAM-quick context-sensitive help windows covering all aspects of the computer's operation.

You can switch the MultiSpeed's dual-speed 8086-compatible CPU, the V-30, to a staid 4.77

(continues)



A lightweight, inexpensive laptop, the NEC MultiSpeed's claim to fame is its near-10-MHz clock rate.

MHz, but a month of software testing never required the slower setting. The MultiSpeed roared through *Microsoft Word*, *VP-Planner*, *1-2-3*, *Webster's On-Line Thesaurus*, *Keywords*, *WordStar*, *VP-Info*, and *StarFlight* without a glitch. Because of the relatively slow 3½-inch drives, however, the machine's fast clock speed may not have much effect on disk-intensive operation.

The MultiSpeed's rechargeable NiCad battery lasts from 4 to 6 hours, depending on how often the machine accesses its two 3½-inch floppies. The machine has a rear jack for the AC adapter plug, along with parallel and 25-pin serial ports. Nearby are a CGA-compatible monitor port and a tiny reset button.

In laptop land, seeing is believing. The MultiSpeed's 25-line-by-80-column display offers 640-by-200 resolution, but the Supertwist LCD isn't quite as readable as that of Toshiba's T1100 Plus. NEC is readying a Supertwist display with switchable backlighting, which could rival the Zenith Z-181's dazzling display quality. According to NEC's timetable, the new display should be available by the time you read this. NEC also asserts that the upgrade's screen hinge will be more durable than the current flimsy version.

A profusion of ROM-based desktop utilities sweetens the pot. The utilities occupy 512K of ROM and include an outliner, a notepad with a 20,000-word spelling checker, a phone dialer, a full-featured communications program, and a setup utility; pushing

a red-lettered hot key accesses these pop-ups. The setup program acts as ground control, regulating the pop-up and RAM disk buffer sizes, CPU speed, and current screen display mode (LCD or external monitor).

NEC's 126K nonvolatile RAM disk, however, is the most welcome extra; clicking off the NEC in midsentence won't condemn your data to hyperspace. Voracious virtual disk users can also create larger, more volatile RAM disks. Be forewarned, though: In *PC World* tests the MultiSpeed answered to neither the RAM-DRIVE.SYS command (from DOS 3.20) nor sundry third-party RAM disk utilities. Only VDISK.SYS (from DOS 3.10) summoned the desired virtual drive.

MultiSpeed options run the gamut from luxury to necessity. Access to on-line data bases and company mainframes is provided by a \$399 Hayes-compatible internal 300/1200-bps modem. Interestingly, NEC isn't in the business of peddling external drives; you must hook a cable from a special port to your desktop machine's floppy disk controller.

With a one-year warranty, toll-free phone support, and a promise to replace faltering units within 48 hours, NEC seems determined to back its flashy product with solid support. After witnessing its near-10-MHz speed, users who've dismissed laptops because of their poky performance may have a change of heart. And why not? Sipping champagne at the beach

while your MultiSpeed rips through a spreadsheet recalc may be as close to computer nirvana as you're likely to get. —Art Wilcox

Tandon PCA AT compatible

Pros: Reasonable price, switchable clock, complete hard disk options
Cons: Flimsy keyboard

Tandon Corp.
20320 Prairie St.
Chatsworth, CA 91311
818/993-6644

List price: with 512K RAM, 1.2MB floppy drive, keyboard, MS-DOS, and GW BASIC \$2195; with 20MB hard disk \$2495; with 30MB hard disk \$2995; with 40MB hard disk \$3395; with 70MB hard disk \$3695; amber monitor \$240, serial/parallel expansion board \$90, color/monochrome display adapter \$90

When IBM dropped Tandon as a disk drive supplier in 1984, most industry analysts figured the company was finished. Obviously, they underestimated Tandon's resources. The firm not only is still OEMing disk drives, it also is attempting a renaissance with a new line of AT and XT compatibles.

Tandon's AT compatible, the PCA, is a well-constructed, no-nonsense clone for a moderate price. Its sturdy chassis is roughly the same size as the IBM AT's,

(continues)

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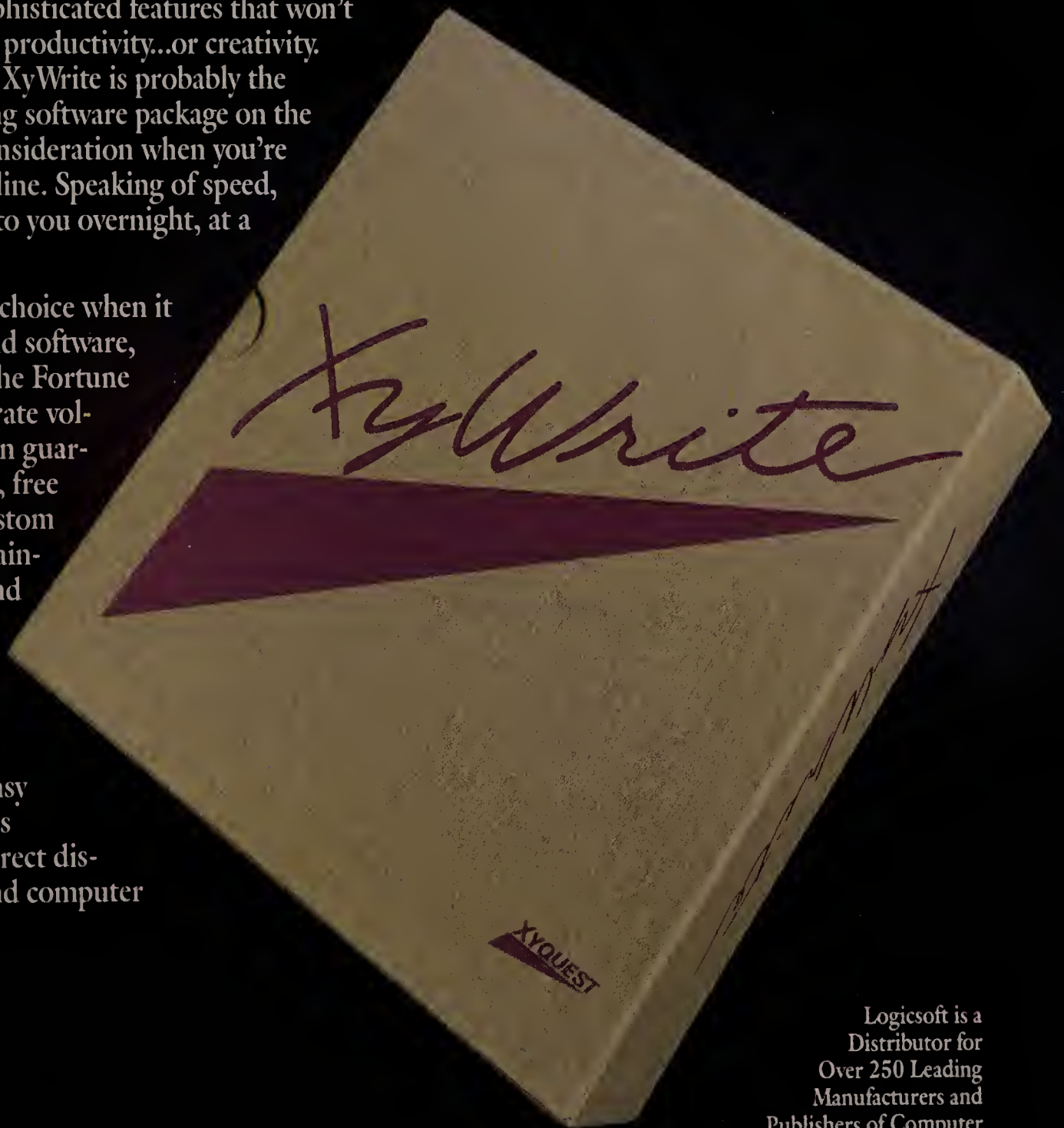
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and its performance is similarly close (see Figure 1). The 80286 CPU normally runs at 8 MHz, but for sensitive software you can downshift to 6 MHz with a <Ctrl>-<Alt> command.

With 512K RAM, a 1.2MB floppy drive, and a keyboard, the PCA will run you \$2195—not bad for a clone from a major manufacturer. As you might expect from a disk drive maker, most of the PCA’s options have to do with mass storage. With a 20MB hard disk, the machine sells for \$2495; with a 30MB hard disk, \$2995; and for the 40MB model reviewed here—with color/monochrome display adapter and amber monitor—the company asks \$3725. The 40MB drive offers a speedy average access time of 34 milliseconds (ms).

The PCA is as expandable as the AT. It provides six 8/16-bit slots and two 8-bit slots, plus room for five half-height devices. From the front of the machine you can access three half-height devices—for example, a 5¼-inch drive, a 3½-inch drive, and a tape backup unit. Even if you stuff the box with devices, the 220-watt power supply should stand the strain.

Like almost every AT clone, the PCA includes a battery-powered clock/calendar and a socket for an 80287 coprocessor. Filling the empty RAM chip sockets on the motherboard with 256K-bit chips yields a full 1MB of RAM. The machine’s 64K of ROM stores one of Tandon’s nicest touches: a ROM-based setup program, which you summon by pressing <Esc> as the machine powers up. With

Tandon Bounces Back

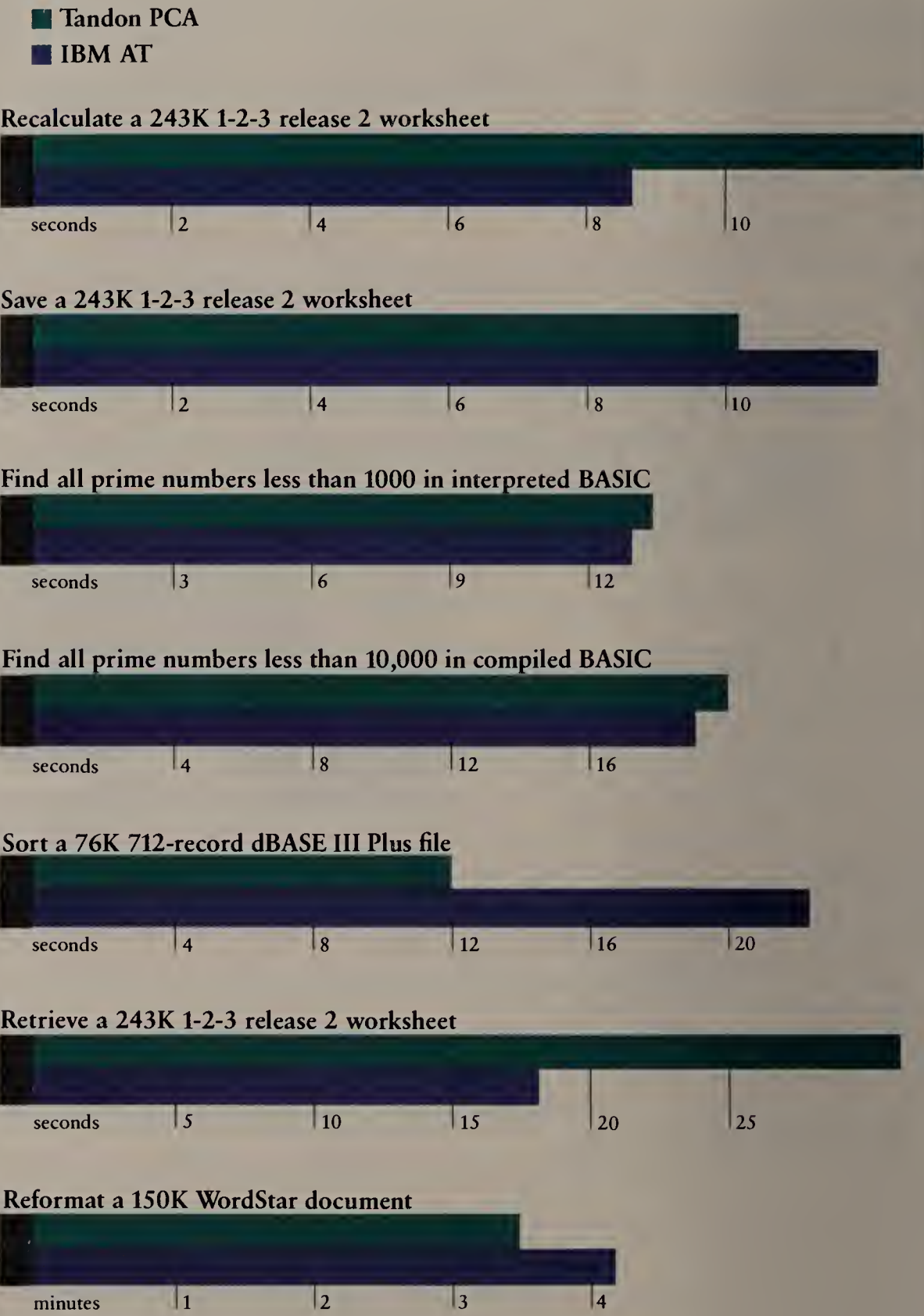


Figure 1: Tandon’s PCA is faster than IBM’s 8-MHz AT with disk-based operations but slower with processing-intensive tasks.

(continues)

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Hardware: Requires a minimum of 256K RAM with two disk drives. Program will support up to 640K RAM and a hard drive. Not copy protected.
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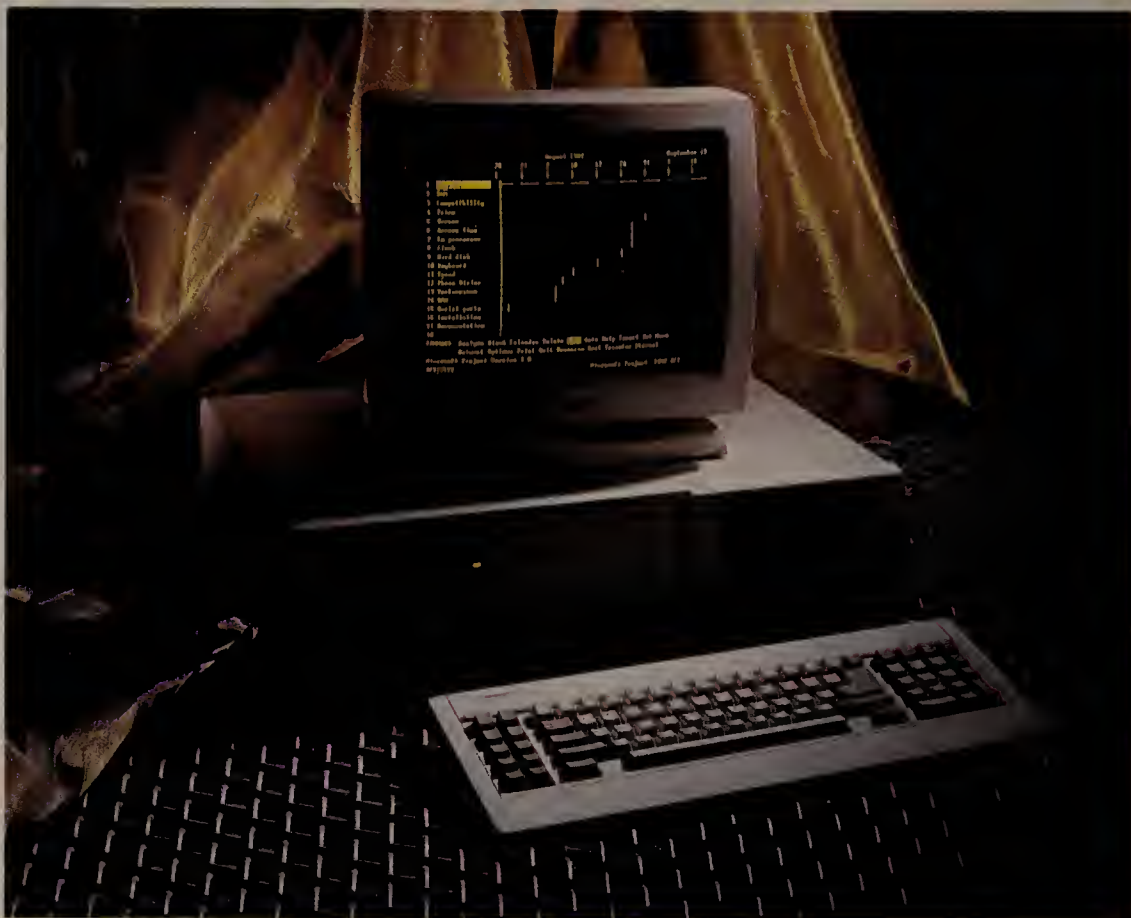
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From the Hardware Shelf



A plain-vanilla AT clone, Tandon's 10-MHz PCA offers a wide selection of mass storage options.

the setup menu you can switch the clock speed, activate a screen-blanking utility, and assign parallel and serial ports.

Tandon currently offers only one monitor with the PCA: an amber monochrome model on a tilt-and-swivel base. The display looks as sharp as IBM's classic but is less subject to streaking when scrolling text. The PCA's standard AT-style keyboard, however, is a flimsy job, apt to cause double and inadvertent keystrokes. A serious user is sure to seek a replacement after just a few trying hours of typing.

This ailment aside, the PCA looks like a solid competitor in the AT-compatible field. It ran our selection of software programs without error, including *SideKick*,

1-2-3, *SuperKey*, *dBASE III Plus*, *Microsoft Word*, *WordStar*, and *Framework II*.

The PCA comes with MS-DOS 3.10, GW BASIC, a one-year warranty, and—as is so often the case with clones—primitive, incomplete documentation. Poor instructions complicate the installation of such options as the \$90 color/monochrome graphics board and the I/O board, which offers one serial and one parallel port and also sells for \$90.

Tandon's PCA is a good deal, but not extraordinary. The 20MB hard disk configuration is probably the most economical, but

(continues)

Mark Johann

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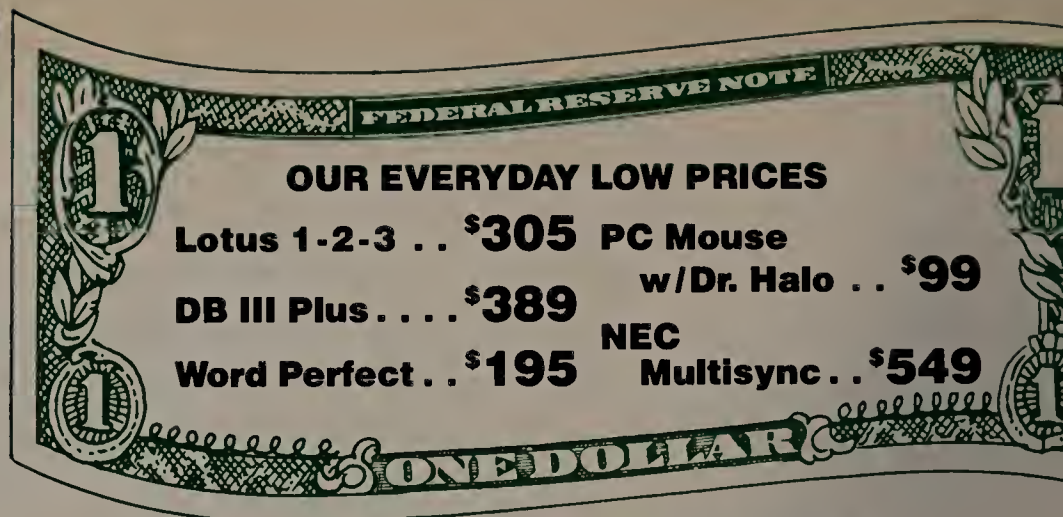
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One such company is Mountain Computer, a strong, diversified player in PC mass storage. In *PC World's* roundup of slot-bound drives (see "Card Tricks," *PCW*, June 1986), Mountain's 20MB DriveCard offered the greatest amount of board-based storage. Now, only a year later, 20MB on a board is a yawner. So Mountain has taken the next logical step: the 30MB DriveCard.

With a width of 1.7 inches, the 30MB DriveCard is hardly svelte. In fact, its girth gobbles 1½ slots in many computers—including Compaq Portables and Deskpros—leaving room for only a half-length board next door. In PCs, XTs, and ATs, you can limit the DriveCard to one slot by relocating the speaker and seating the board in slot number one. The company claims you can pull this trick with most IBM clones, but you should ask Mountain whether the scheme will work with your machine before you buy.

Once bedded down, the DriveCard is more benevolent. Because the factory takes care of low-level formatting, you need only type *install* to complete the disk's setup process. System files are then automatically transferred to the DriveCard from the DOS disk in drive A:. And for those installing the DriveCard as a second hard disk, fear not: Your power supply should be oblivious to the board's meager 8-watt tariff.

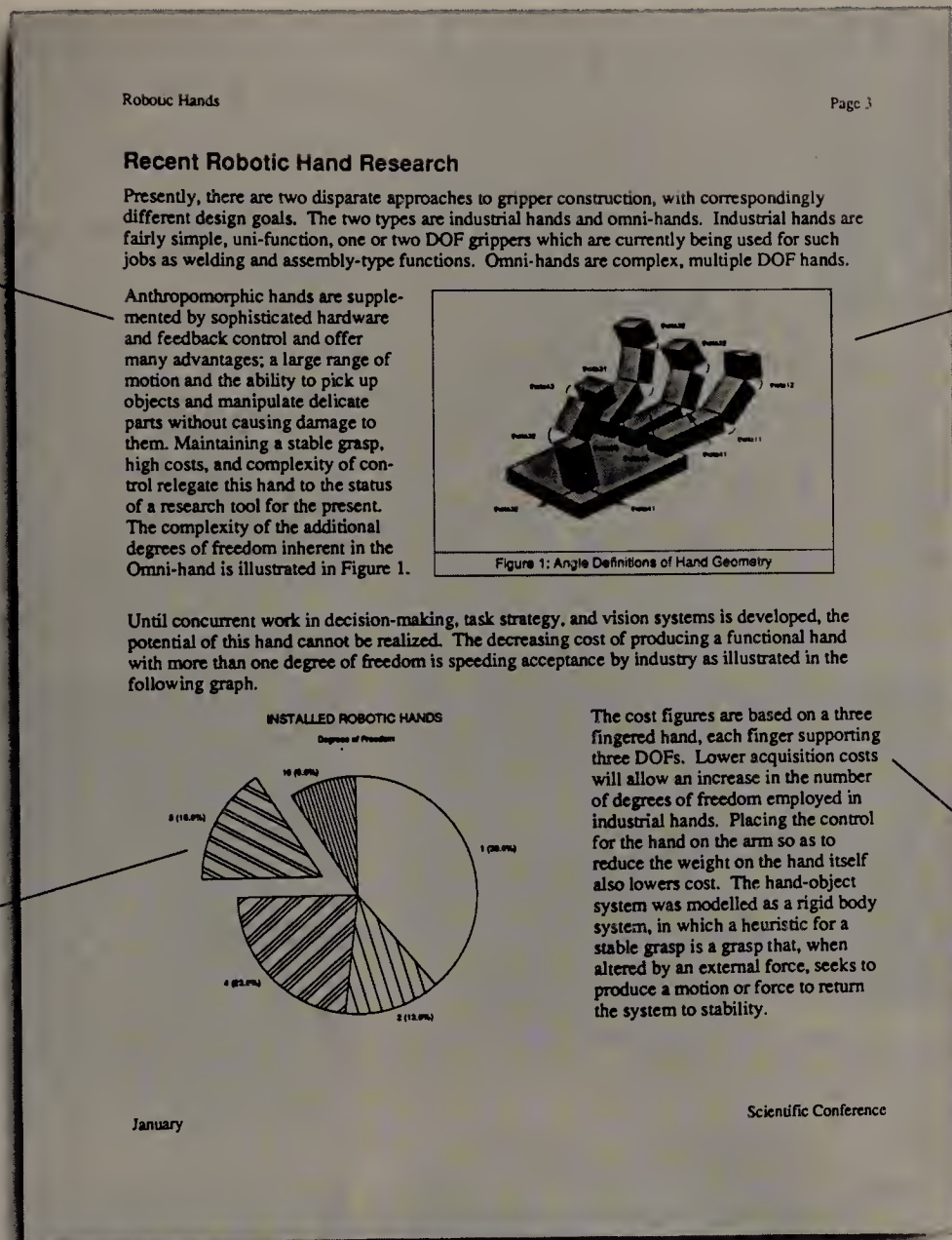
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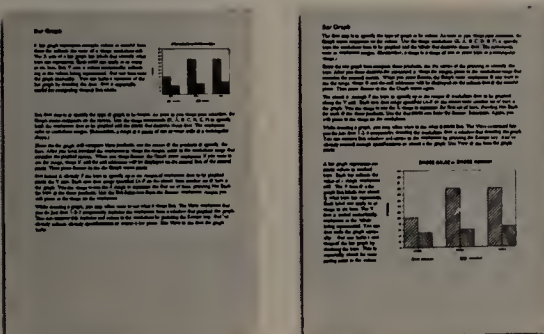
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DriveCard is fully prepared—it can withstand 10 g's of shock while operating and a 50-g slap with its heads parked. Several Compaq bashing bore witness to these stats—the drive continued to whirl without fail. An automatic head-parking feature works not only when the power is cut but also when no disk access occurs for 30 seconds. For true safety zealots, Mountain also includes a manual parking utility.

The DriveCard may be able to take its licks, but how fast does it tick? Mountain chose stepper-motor technology in favor of the more efficient voice-coil type, but it also used a 3-to-1 interleave factor to nudge the disk to a fairly respectable 68ms average-access time. To test the drive's accuracy, *PC World* instructed it to sequentially read and write a 100K and a 1MB file and then to perform a series of random searches. The DriveCard ran all the tests without error.

Mountain rounds out the DriveCard with thorough, concise documentation and free telephone support. And although it's up to you to ship the board back to the company, Mountain will cover all repairs made within a year of purchase.

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(continues)



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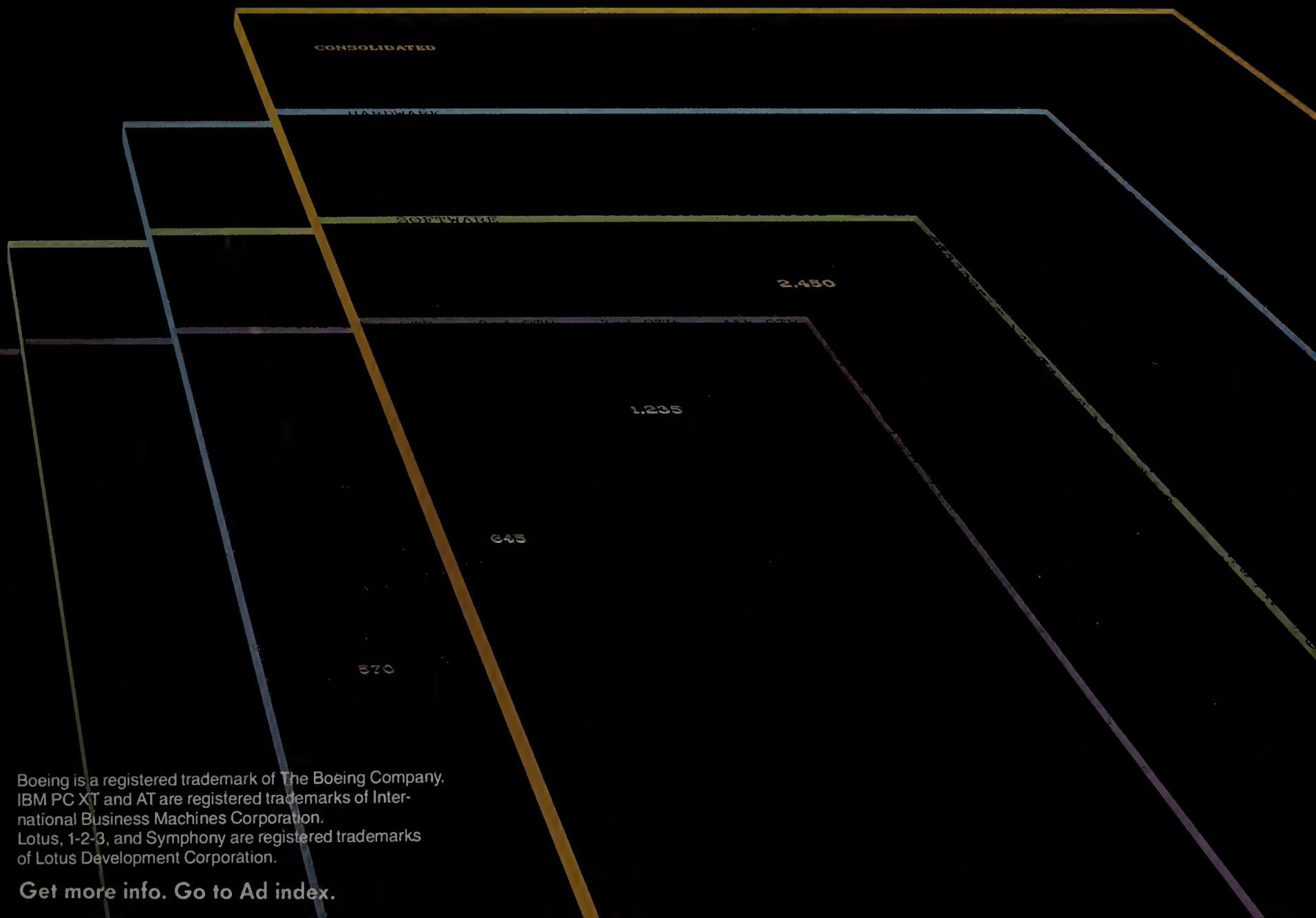
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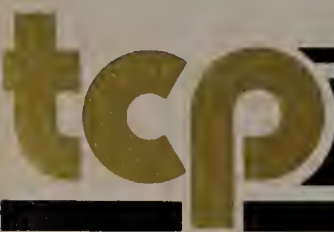
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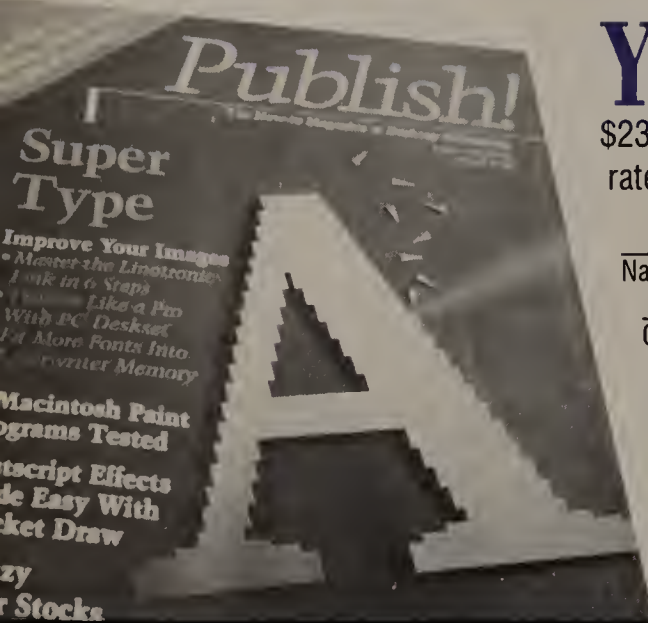
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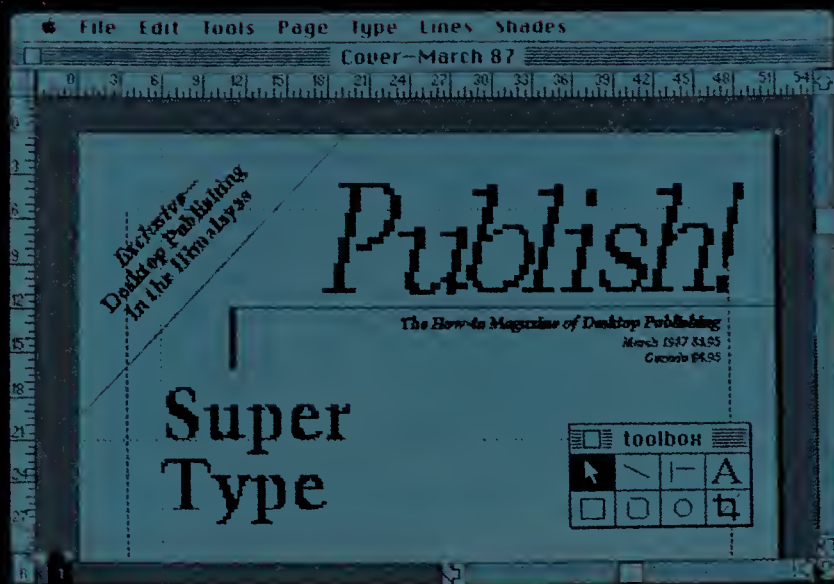
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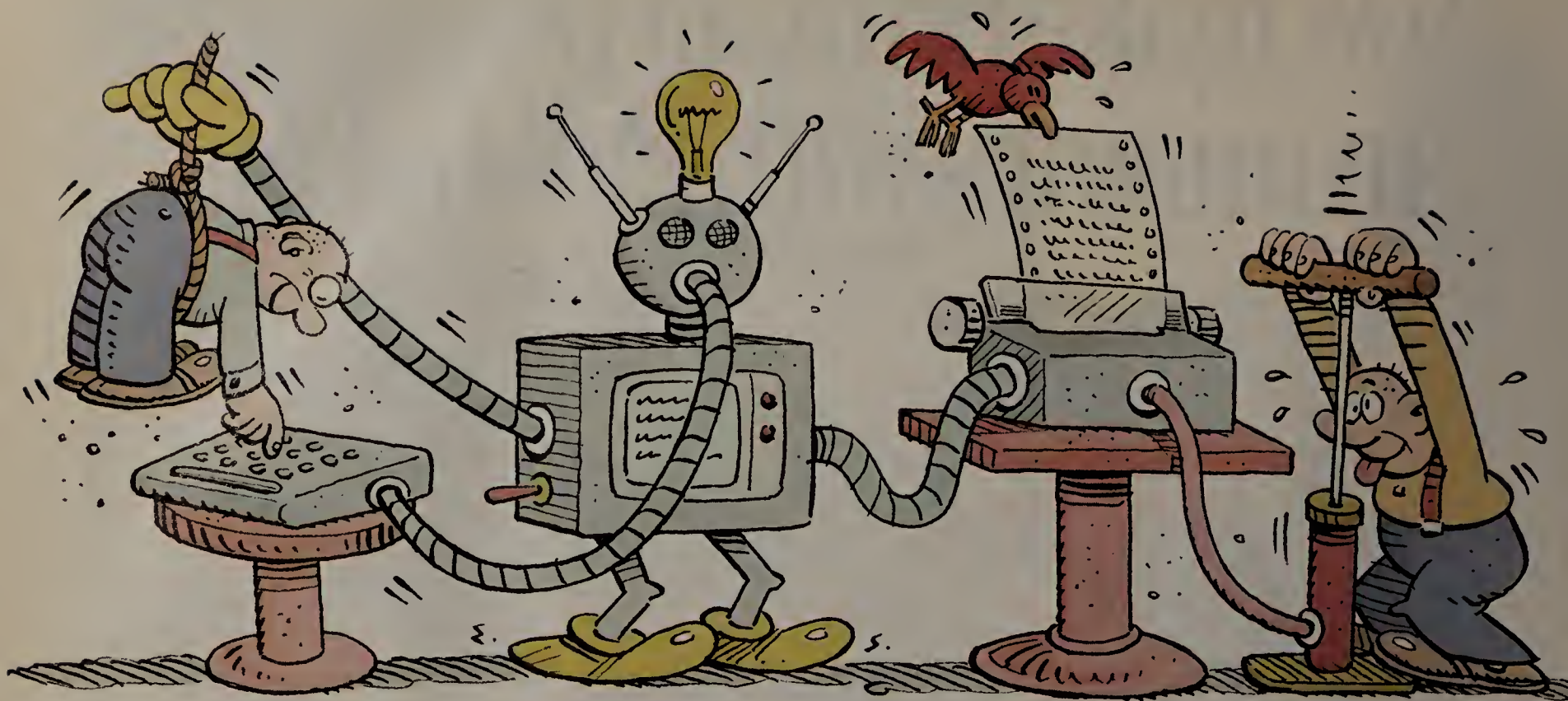
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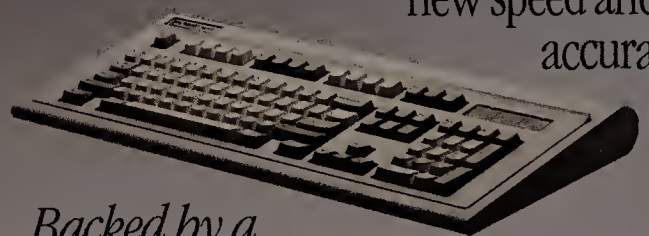
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The Visionary line has been around for about five years, quietly setting the pace for modem technology (its rather poky 1200-bps rate is its only old-fashioned feature). The recent crop of less-sophisticated imitators, such as the Hayes Transet and the Prometheus ProModem, indicates an increasing acceptance of the automated modem approach. Now if I could only plug a keyboard into the darn thing ...

—Daniel Drasin

Art Wilcox is a Contributing Editor for PC World. Paul Meyers is an independent San Francisco video producer and freelance writer. Daniel Drasin is a freelance writer and media producer who lives in Berkeley, California. ●

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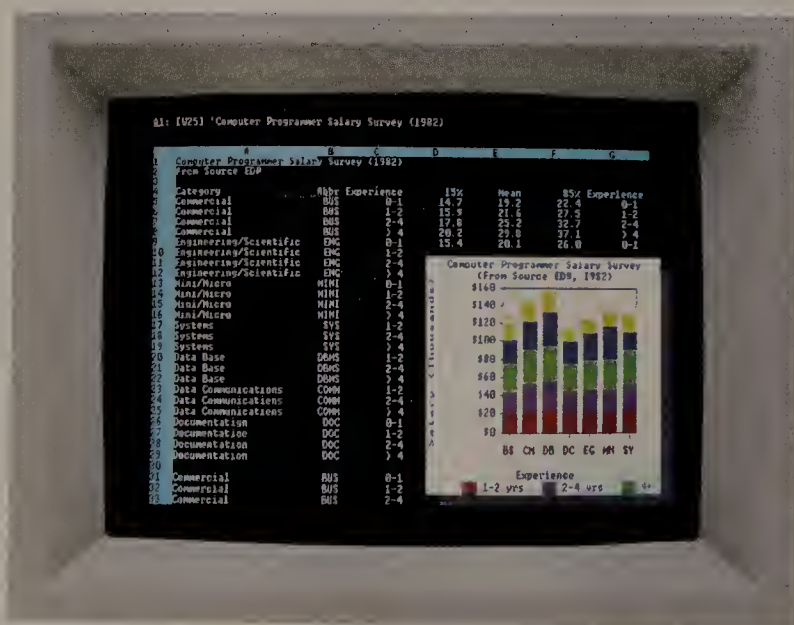
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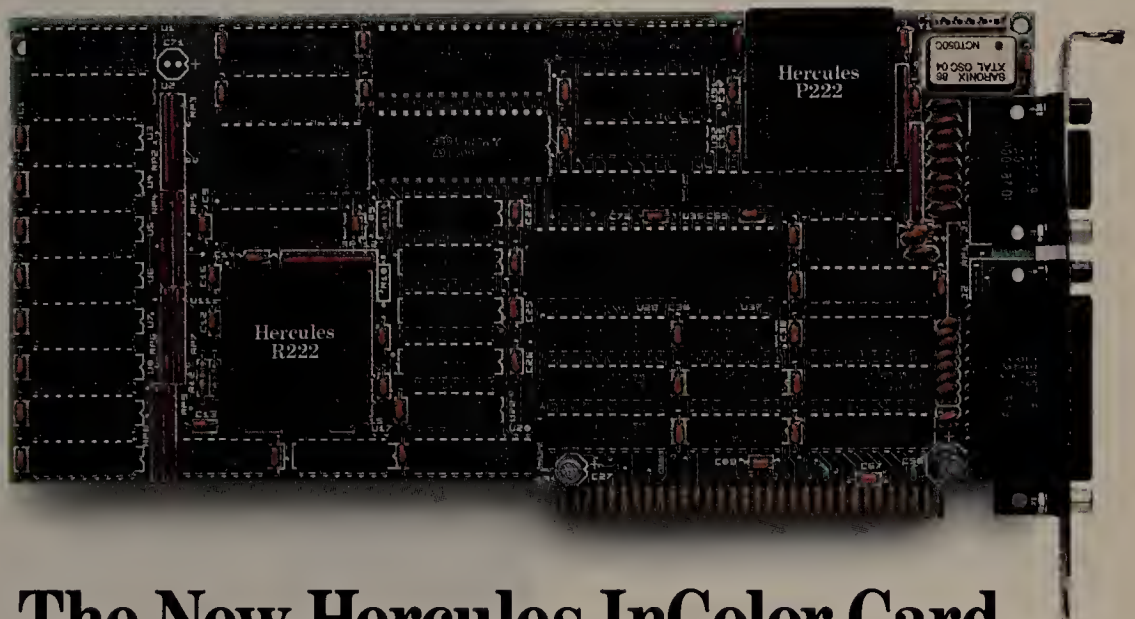
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The New Hercules InColor Card.

Extending the Blue Horizon

While IBM builds a platform for the future generation of PCs, its rivals plan to exploit the generation gaps.

Eric Bender

Sticking with open architecture 'probably was good for IBM,' says Ed Belove of Lotus. Otherwise, 'that would have been a big risk without a huge payoff.'



Hearing that OS/2 software will run on ATs and compatibles, the industry breathed 'a big sigh of relief,' notes Businessland's Enzo Torresi.



When IBM's new Personal Systems/2 materialized in actual sheet metal and silicon this spring, the clouds of uncertainty swirling around the computer giant's plans finally lifted.

And while adjusting to the new landscape will take time, a few common views seem clear: IBM has done its homework in creating a powerful, logical framework for future PC design; the ongoing commitment to an open design architecture will pay off for IBM and everyone else; the major benefits of that new architecture are at least a year away; and the hardware incompatibilities between the new and old designs pose both short- and long-term problems for personal computer users.

Naturally, makers of IBM compatibles zero in on the last point. Many even insist that this time they will not march in lockstep behind IBM to create a new hardware standard.

Nevertheless, it's difficult to argue with IBM's declaration that the Personal Systems debut ranks as its most important since the PC was introduced in 1981. Some say the new line is even more crucial than the PC family. "It will dramatically alter how businesses pull their computer resources together into a connected, integrated system," proclaims Alan Hald, chairman of MicroAge Computer Stores.

But most early assessments of the new machines themselves are an exercise in moderation. The Personal Systems are not seen as the aggressive clone-killers that some pundits foretold. Instead, observers

repeatedly pick the same word to describe the systems: *nice*. And IBM's pricing, while competitive, shows no inclination toward fighting in the streets.

IBM's new Operating System/2 (OS/2) promises considerably more drama in software—next year, when it arrives along with suitable applications. Liberating memory and multitasking in the now half-dormant Intel 80286 and 80386 chips, OS/2 should support a stunning new array of applications on both PSs and existing ATs (see the sidebar, “Beyond DOS: Operating System/2”).

“Introducing an entirely new operating system is never easy,” acknowledges Lee Reiswig of IBM's Entry Systems Division. Especially in the early going,

Both OS/2 and the Personal Systems reflect a strategic view of future PC applications—particularly in the Fortune 500 companies at the heart of the Big Blue empire.

many users may lack compelling reasons to make the switch. “PC-DOS will continue to be the operating system of choice for many of our users,” Reiswig emphasizes.

Both OS/2 and the Personal Systems reflect a strategic view of future PC applications—particularly in the Fortune 500 companies at the heart of the Big Blue empire. IBM's strategy calls for a powerful, well-connected workstation, created without too much emphasis on price. Translated into hardware, that vision means a number of quiet, well-engineered modifications that will offer minicomputer-like flexibility but flunk on compatibility with today's add-in boards.

Here's where competitors and customers may pause. While some large firms have already bought thousands of Personal Systems, others have nixed the new machines. “Do you expect me to throw away those 10,000 PCs you sold me?” one micro manager asked his IBM sales representative.

In decreeing a standard that leaves current customers with no hardware upgrade path, IBM may find itself leading a rather small parade, suggests Rod

Canion, president of Compaq Computer Corporation. Despite the sentiment that IBM creates standards simply by creating systems, Canion insists “that's just not the case in today's world. If that were true, where are the RT PC clones?”

Mass Conversion

One size fits all in Personal Systems floppy drives: 3½ inch. Unsurprisingly, Lotus, Microsoft, Ashton-Tate, Borland, Software Publishing, and other major software firms rushed to disclose plans for supporting the new media.

Everyone agrees that the new format, offered in a host of personal computers but never widely accepted, offers technical advantages over the ubiquitous 5¼-inch floppies. “At some point the industry had to take a deep breath [and make the change],” says Ed Belove, vice president for corporate research and development at Lotus. “It took IBM to do it.”

But divergence from the hundreds of millions of existing 5¼-inch disks does create a certain level of discomfort. Customers who want to swap data with existing machines must think about conversion options. “No longer does the ‘Nike Net’ work,” points out Bill Hiller, director of communications systems at Digital Communications Associates.

“Three-and-a-half inch is going to be tough,” agrees Bob Brown, president of Quadram. “Big guys have tried it before, and it didn't go.”

However, others expect a slow but steady transition. “It's going to be a point of resistance, but [the shift] will happen faster than people think—probably within 12 to 18 months,” predicts Enzo Torresi, vice president of Businessland.

At least in the near term, the revamped bus will be even more of a customer headache. IBM's new 32-bit Micro Channel bus offers about six times the data transfer rate of an AT bus and freedom from DIP switches. Once multitasking software arrives, the new bus will also provide an elegant way to let various system components address each other directly, without waiting for the CPU. But for now, the computers built around the new bus cannot be expanded with add-in boards, since none exist.

Third-party suppliers hope to begin shipping products this summer. Notes Nora Gildea, marketing vice president at IDEAssociates, "[IBM itself] isn't offering anything in the way of memory boards or communications adapters until the end of the year. I don't think the machines will take off until add-ins are available.

"It's in IBM's interest to involve companies like ours in their new machines," she explains. "We can come out with products faster than it can." In apparent agreement, IBM released relevant technical documentation to third-party developers in May.

■ Solid Silicon

IBM was widely applauded for building graphics support into every Personal System, and the hardware received generally good initial reviews, particularly for overcoming the speed limits that have plagued earlier adapters.

However, some critics see a less-than-rosy picture. Michael Goulde, senior analyst with the Yankee Group, terms the Video Graphics Array (standard equipment on the Models 50 and higher) "a dog" because the next-generation adapter supplies only 16 colors in 640-by-480 graphics mode. "That's almost an insult," Goulde says. Additionally, Big Blue's new analog monitors don't work with existing equipment.

Seeking to develop a balanced overall design, IBM laid the foundation for faster performance. The basic design is also "much more of a plug-and-play system, much easier to sell and service, and much more reliable," remarks Richard Rabins, president of Alpha Software.

In terms of raw horsepower, the Personal Systems have struck observers as strong but not remarkable. The Model 30 offers excellent performance for an Intel 8086-based system but remains in the low end of the market. Outfitted with 10-MHz 80286 chips, Models 50 and 60 are quick, but not the quickest 80286-based machines available. At the high end, the Model 80 is harder to assess because it has not yet shipped. Even the fastest version of this model won't necessarily claim the heavyweight crown, though, with other 20-MHz Intel 80386-based machines expected to arrive. The Model 80 also yields a performance edge to the RT PC, according to IBM.

Looking at the model numbering, it does not take a particularly suspicious mind to guess that other Personal Systems—an 80286-based laptop, for example—might surface between the current offer-

ings. Also missing from the present line is a network workstation—in a world where connectivity is key, IBM doesn't offer a Personal System above the Model 30 without a hard disk. Price tags for a next-generation workstation, then, start at \$3595 for the device alone. "3Com is probably beside itself with glee," says Goulde.

■ Contrarian Compatibility

Now that the curtain's been raised, the clones should begin arriving. Or should they?

The Personal Systems don't enter the arena of cheap PC and XT clones, where price reigns supreme. IBM's mammoth development effort has produced machines that look very inexpensive to manufacture, but IBM clearly didn't want to play the low-cost game. "Leading Edge and the low-end clones are dancing," says Rabins. Suggests Gildea, "I don't think the Personal Systems will have any impact at all on the clones; IBM is withdrawing wounded."

With Microsoft versions of DOS 3.30 and OS/2 available for all manufacturers, AT compatibles are



IBM ignored small business, says analyst Michael Goulde.

Beyond DOS: Operating System/2



Mark Farbin

Martin Herbach of Computer Associates applauds OS/2.

"The most significant part of the announcement, technically, was that OS/2 would be available from both IBM and Microsoft, and that it would run on current 'classic' machines," says Enzo Torresi, vice president of Businessland. "There was a big sigh of relief from everybody."

At IBM's April avalanche, Computer Associates' Micro Products Division showed a dazzling demonstration of *SuperProject* software running under an early version of OS/2. Computer Associates split off code for one computing-intensive function from

the rest of the project management software, ran the two processes side by side in protected mode, and sent data to *SuperCalc 4* running in the DOS "compatibility box." "In the grand sense of what you will do with OS/2, that was a primitive display," says Martin Herbach, Computer Associates' assistant vice president of development.

Lotus, Microsoft, Ashton-Tate, and other major and minor software houses also are busily writing OS/2 applications. Some of these programs will debut early in 1988 with the operating system. Others, likely to appear much later in the year, will exploit OS/2's Presentation Manager graphic user interface. "I'm optimistic that there'll be quite a lot of good software right from the start," says Adrian King, Microsoft's director of system software.

Microsoft promises that application developers can write one version of a program that will run on any OS/2 machine, IBM or not. In this environment, the operating system should protect concurrent applications from colliding—if developers respect the conventions. "I will be very disappointed if we've reached this point of maturity in computer science and fail here again," Torresi remarks.

Microsoft chairman Bill Gates will be disappointed if OS/2's limitations aren't made clear. It provides no benefit for current applications, he emphasizes.

OS/2's requirements have produced some skeptics, including Rod Canion, head of Compaq Computer.

"People will have to pay \$325 for the new operating system, purchase a memory upgrade, learn the new operating system, and pay the penalty of slower performance for current applications," he notes.

Canion suggests that a cheaper way to fill most people's needs is at hand. "This year you'll see operating system extensions that will allow you to run DOS 3.00 in a very resilient way, running a number of existing applications concurrently in virtual mode."

Another public debate centers on why OS/2 will arrive almost four years after the AT, many months behind Microsoft's original schedule. However, this may misjudge the software. Rather than another round of DOS, it's an extremely sophisticated, business-oriented operating system built from scratch to exploit some very powerful machinery. "That's a better hardware base than what UNIX started with, and there's a good possibility that OS/2 will be better than UNIX," remarks *VisiCalc* coauthor Dan Bricklin.

Certainly developers aren't complaining about the huge memory range, multitasking capabilities, and other bonuses that will soon open up for them. "I haven't had this much fun since 1979; we can pretty much do as much damage as we want," jokes Herbach. "In a few years, today's software will be unrecognizable; it will look like computer games." —E. B.

still in strong demand among computer dealers and customers. Given the potential technical and legal difficulties of replicating IBM hardware, other manufacturers "simply will offer more value in their PCs," forecasts Quadram's Brown.

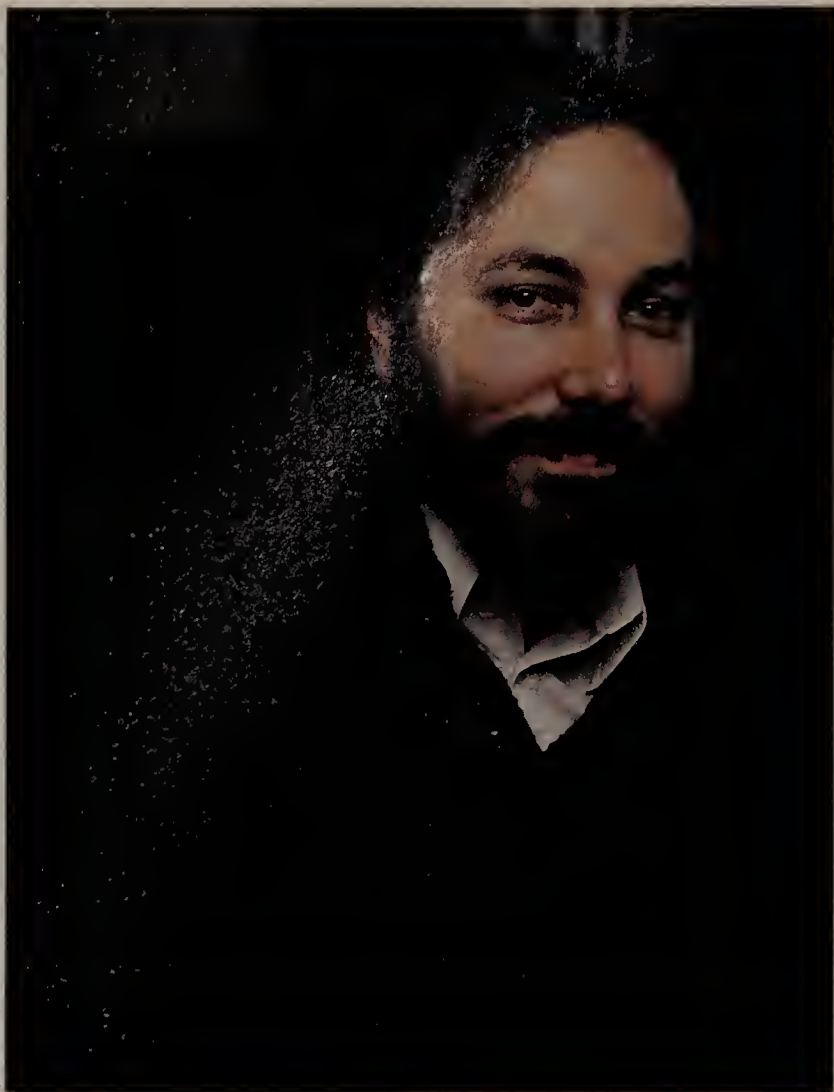
Most clone makers have promptly issued "we-don't-see-any-significant-impact-on-our-business" statements, but they face some interesting choices. Some Personal Systems components can be cloned quickly; duplicating other aspects of the underlying technology will be more difficult. For example, two BIOS chips are installed in Models 50 and 60—one for the 80286's real mode, the other for its protected mode. Phoenix Technologies plans to deliver a compatible BIOS for the first chip by October, allowing products so equipped to spring up at Fall COMDEX. However, the second BIOS chip is linked specifically to IBM's OS/2 and is thus useless to competitors who will run Microsoft's OS/2.

Chips & Technologies and Paradise Systems have begun their own versions of the new Blue graphics adapters, which may take a little longer to complete than the BIOS. The job involves reconfiguring current hardware rather than forging new technology.

Battling Buses

Compatibles makers have clearly sent their engineers to explore the far reaches of the Micro Channel lines. Yet Phoenix chairman Neil Colvin says, "I don't think you'll see any hysteria among PC manufacturers trying to replicate the bus. People don't seem to think it's very important."

"The Micro Channel is going to last a long time; there are good technical reasons for it," says Microsoft chairman Bill Gates. In particular, he lists its 32-bit data paths and its advanced juggling of multitasked functions. However, "People aren't taking full advantage of the AT bus today," Gates points out. And he adds that there will be no obvious performance benefits for the new bus in the next two or three years.



Seth Resnick

Phoenix Technologies chairman Neil Colvin argues that IBM did not push the state of the art.

Another issue is the unclear status of IBM's patent protection of the bus. "It looks as though IBM has the option of making it hard or even illegal [to copy]," Torresi says.

Given these challenges, many suppliers may stick with the existing AT bus or the new IEEE-standard PCET (personal computer extended technology) architecture. Or they may discover that the Micro Channel can be copied and that it's legal to do so.

Adding the new-format floppy drives is an easy engineering trick, but practical considerations outweigh the technical superiority of 3½-inch drives, maintains Compaq's Canion. "A move to 3½-inch format makes less sense now than it would have four years ago. Floppies are no longer the primary storage medium in most business systems," he says. Additionally, he points out, hard disk backup requires more storage than a 1.4MB floppy can deliver.

Outside IBM, technologists argue the overall question of how well the Big Blue technology stacks

up. "There's nothing in the announcements that's ahead of anybody," Colvin claims. Despite all the publicity about IBM's 1-megabit, 80-nanosecond memory chips, he maintains, about 30 chip makers are delivering similar silicon, while other components, like the high-speed ESDI disk controllers, can be matched essentially off the shelf.

Other observers are more impressed. At the time of the announcement, at least, "IBM was ahead of the clones in engineering," says Lotus's Belove.

■ Worlds Apart

IBM can claim another key achievement. Notes Belove, "It didn't force its users into an us-or-them choice, which probably was good for IBM. That would have been a big risk without a huge payoff."

But, by common agreement, the world of personal computing is splitting into individual nations, with some tough immigration laws.

"Even five years from now, if you add up all the people using an extension of DOS 3.00 and all the people using OS/2, there will be more with DOS," predicts Canion. "In a big company with several thousand PCs, there's no way that everybody's going to convert to the new operating system. It just costs too much."

Some predict ever-deeper divisions between two main PC constituencies—large corporations and small businesses—reflected in the Personal Systems. "There's not much in here for the small business," Goulde says flatly. Predictably, others both within IBM and elsewhere disagree vehemently.

No one questions that the landscape is changing in at least one respect: IBM advertisements retired the Little Tramp in favor of the "M.A.S.H." team players. That fate seems suitable for Charlie Chaplin's original character, who never held a job long, although he left fond memories behind. ●

|| Eric Bender is PC World's East Coast Editor.

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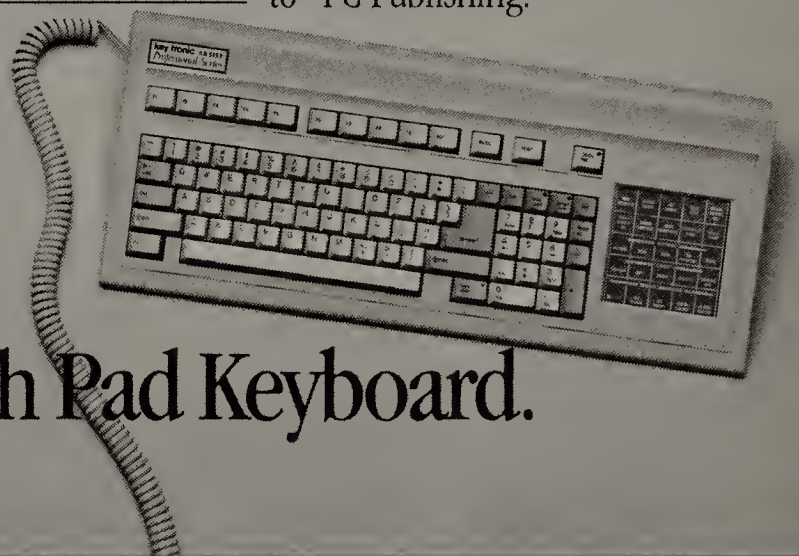
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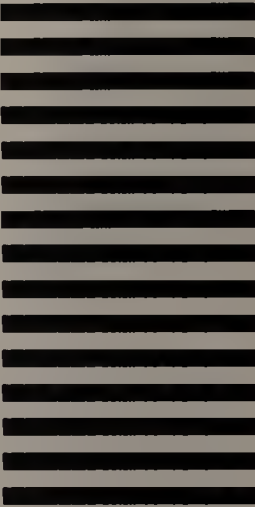


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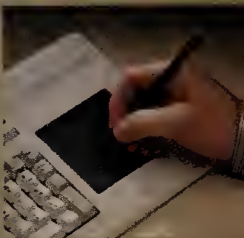
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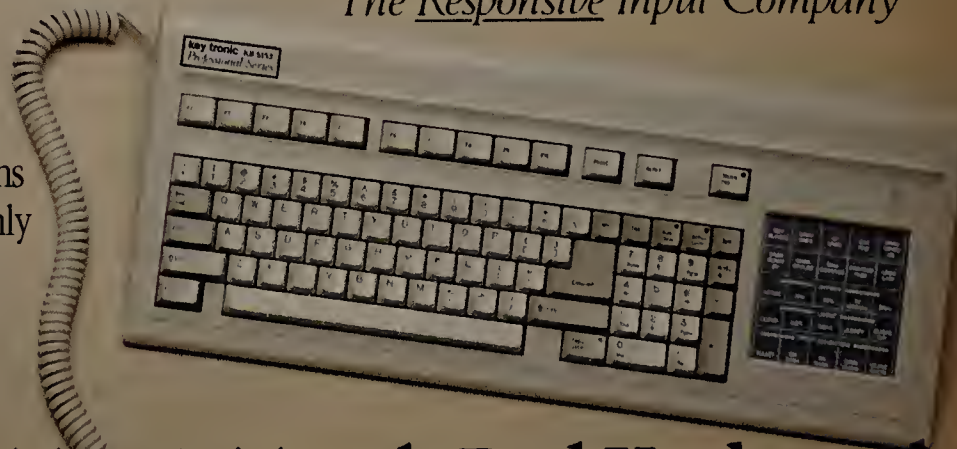
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Clout 2 Call
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Quickcode 138
Quicksilver 295
Quickreport 138
Revelation 469
R: Base System V 345

EDUCATIONAL

Flight Simulator 28
Turbo Tutor II 25
Typing Tutor III Call

GRAPHICS

Chartmaster Call
Energraphics 2.01 294
In-A-Vision 275
Microsoft Bus Mouse 106
Microsoft Chart 164
Microsoft Serial Mouse 119
Newsroom 31
OPTI Mouse W/DR Halo II ... 96
Printshop 33
Signmaster Call

INTEGRATED

Ability 59
Enable 355
Smart Software Call

LANGUAGES

Lattice C Compiler 242
Microsoft C Compiler 249
Microsoft Fortran 4.0 255
Microsoft Macro Assembler ... 84
Microsoft Pascal Compiler ... 166
Microsoft Quick Basic 3.0 ... 55
Ryan McFarlan Fortran 305
Ryan McFarlan Cobol 479
Turbo Basic 55
Turbo Pascal w/8087 + BCD... 55

PROJECT MANAGER

Harvard Total Project II 326
Microsoft Project 219
Super Project Plus Call
Timeline 2.0 209

SPREADSHEET

Microsoft Multiplan 108

Spreadsheet Auditor 3.0 \$82
Supercalc 4 Call
VP Planner 49

UTILITIES

Copy II PC 19
Copywrite 39
Desqview 55
Double Dos 30
Fastback 85
Graph in the Box 55
Homebase 39
Microsoft Windows 55
Norton Utilities 3.1 48
Prokey 4.0 70
Sidekick (unprotected) 47
Sideways 3.1 39

WORD-PROCESSING

Easy Extra 88
Microsoft Word 179
Multimate Advantage Call
Volkswriter 3 139
Webster Spellcheck 37
Word Perfect 195
Wordstar 162
Wordstar Propac 233
Wordstar 2000+ 206

— HARDWARE —

ACCESSORIES

Copy II PC Board 75
150 watt power supply 69
Mini Micro Parallel
Print Buffer 69
Masterpiece 88
Masterpiece Plus 113

BOARDS

AST Advantage Premium 422
AST Premium Sixpac Call
AST Sixpac (384K) 229
Hercules Color Card 145
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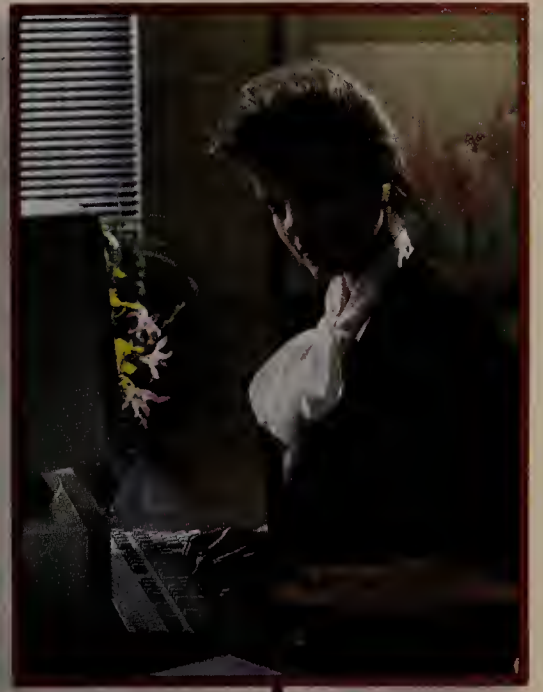
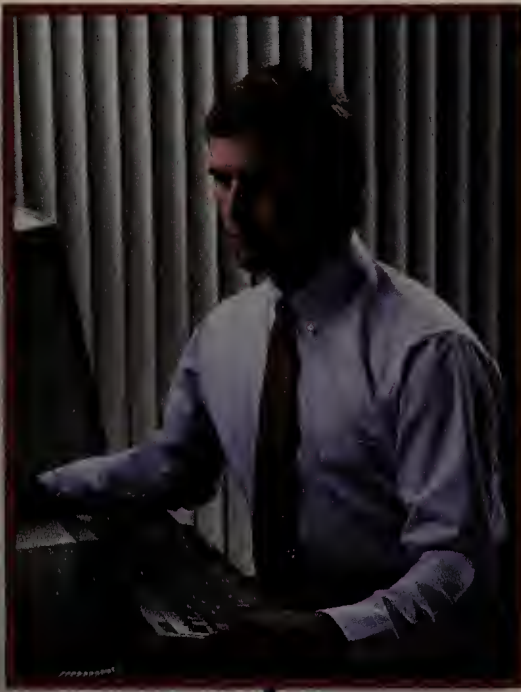
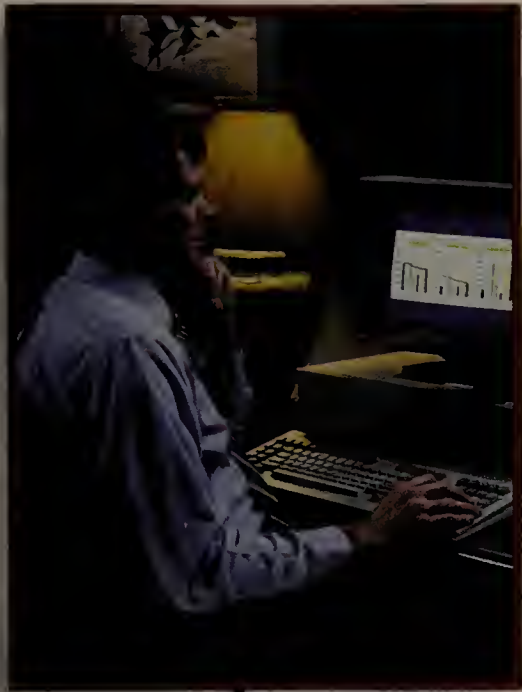
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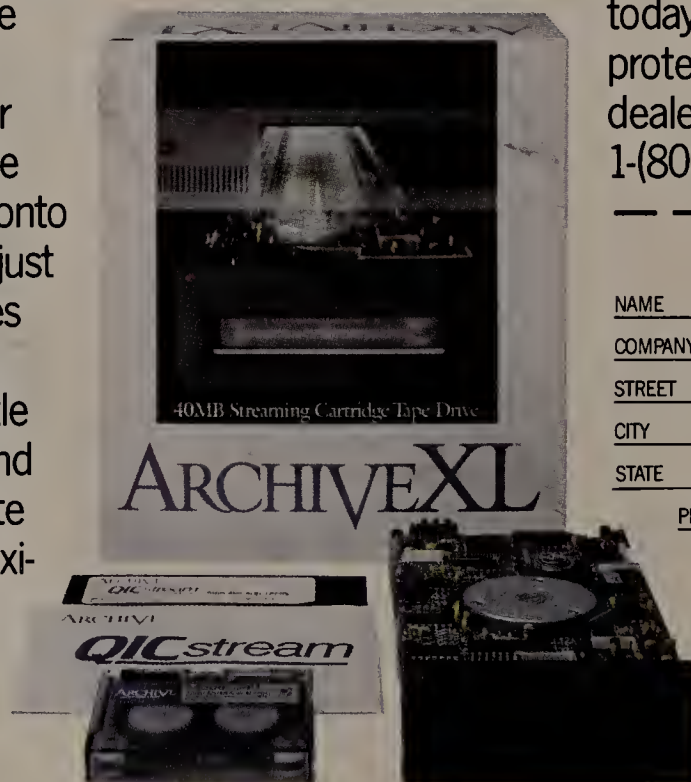
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Bill
Gates



Gates on Systems/2

Since April 2, the personal computing community has been grappling with the meaning of IBM's product announcements. Microsoft Chairman Bill Gates offers insights on the next generation of personal computers and operating systems.

||||| One sure result of IBM's Personal System/2 announcements was confusion. Retailers reported a slowdown of all orders as companies large and small stopped in their tracks to evaluate the impact of Big Blue's new machines and operating system.

As IBM's strategic partner in the operating system arena, Microsoft played a significant role in the development of this next generation. To help put the new systems in perspective, *PC World* Editor Harry Miller talked to Microsoft Chairman Bill Gates. An edited transcript of their conversation follows.

PCW: My impression is that IBM gained some trust with the April 2 announcements. Customers and competitors alike had been very wary of the proprietary form these new machines might take. The an-

nouncement of the open architecture and the non-proprietary new operating system that will ostensibly be the same as Microsoft's OS/2 quelled many of those fears.

Gates: I hope so. I have not seen that point of view in the press, which disappoints me because IBM is extremely serious about what it says; it never intentionally misleads people. IBM said it was going to have an open system. Now, although there isn't a crisp definition of what "open" means, IBM has created a very open system.

We announced the joint development agreement that is the framework for the operating system back in September 1985. People paid surprisingly little attention to that announcement. And it was not just a Microsoft announcement: IBM went out of its way to announce the joint development agreement with Microsoft to work on a next-generation version of DOS that would break the multitasking and protected mode barriers. This also occurred when the Intel 80386 was announced. You have to believe it took incredible effort for IBM to release a statement by Bill Lowe saying the company thought it was a great chip.

IBM was brilliant to use so much of its own technology in terms of the memory chips, disks, network cards, gate arrays, and things like that, yet in the case of two key elements maintain the partnership with Intel on the microprocessor and Microsoft on the operating system. It's a good strategy that will improve IBM's market share through leadership. I think it is the right approach, and I think people

Most

significant

accomplishment:

“Helping to create a workstation standard with MS-DOS so that the same programs can run on millions of machines. When I was 16, working day and night on a FORTRAN compiler, I realized that hundreds of programs had been written before and mine might not be the best. But they all had to be written because there were so many different instruction sets and operating systems. I wondered then if there was any way to eliminate the wasted effort and get fewer but better programs. Accomplishing that is something I feel good about.”

Bill Gates

Photographer:

Ed Kashi

should applaud the company for it, but people rarely do that for IBM. Basically, they're good machines. The end users should like the pricing, and if the competitors are really smart, they can stay in this business and do well.

PCW: But IBM clearly upped the ante for competitors.

Gates: The ante is high. But, of course, it had to go up. Entry Systems Division has something like 10,000 people working on the product line. And it's not just ESD; I was impressed by how many divisions provide parts of the technology. Toronto, Rochester, Burlington, Charlotte, Hursley, Austin, Boulder, and most of the IBM labs I know make some contribution to the Personal System line. Coordinating all the pieces makes ESD totally dependent on those labs. If the Toronto guys can't turn out enough network cards, or the memory guys can't turn out those chips, or the Rochester guys can't turn out the disks, it's bad news. It all has to be pulled together. When the AT came out, miscoordination caused some problems. If IBM can really ship these lines over the next year and keep all the pieces together, it will be impressive. Certainly, early indications from the machines we have used show that they are reliable and very well coordinated.

■ When Does the Future Start?

PCW: If the announcements represent the platform for future applications, how far away is that future? When will the applications we're working with now become obsolete, the way VisiCalc became obsolete when 1-2-3 really took advantage of the PC?

Gates: In my opinion that's a couple of years off. A lot of the software developers we've picked to give us feedback on OS/2 already have access to the information and are starting their work. But work for the broad range of developers starts in August with the shipment of the OS/2 software development kit. So in a year and a half to two years you'll see a wealth of applications.

The example of *VisiCalc* versus 1-2-3 is a good one because when the PC first came out it was important to have *VisiCalc* there, and it sold very well.

When we moved up to the new platform, the ported applications were what got us going, and you're going to see a lot of that on OS/2 as well. The very popular and well-entrenched old character-mode applications that don't use the standard interface will be key to the success of OS/2. Unless people have already started creating a *Windows* application, they're not likely to get a graphic application out in less than a year. So the ported applications will be important.

If our intuition is right, when you see the ported applications sitting next to the graphic applications, you'll say, "I'm going to make sure all my applications work in the graphic form." Certainly on the Macintosh, the few applications that were ported over and ran in the old character mode were not well received. Even though *Windows* is a more evolutionary environment, character-mode applications will stick out like a sore thumb.

PCW: But won't the Presentation Manager in the new operating system and Windows 2.0 handle those character-mode applications better than Windows does now?

Gates: They'll handle them better in the sense that more memory will be available, so you won't have every application competing for the same 640K. In the case of OS/2, it runs only one existing application at a time, and it can't run existing applications in the background. That's why we want to make sure people really understand that if they're going to work with just their current applications, OS/2 does not provide a benefit. At least one of your applications must have been either ported across or created anew for the OS/2 environment.

PCW: Windows 2.0 and Windows Presentation Manager look a lot alike. But if application developers write programs for Windows 2.0, the job of creating a Presentation Manager application is only partially done. How big a job is that conversion?

Gates: Well, let's look at the things you invest in when you create an application. You invest in writing manuals and tutorials and books and in user training. A *Windows 2.0* application preserves all of that work because the visual user interface is absolutely identical to the Presentation Manager of OS/2. The other thing you invest in is the code. It's true that you have to change the *Windows 2.0* source code to make it run on OS/2. Depending on how many graphics primitives your application calls, the amount of code that has to be rewritten ranges from 10 to 20

Favorite

business

program:

“*Excel*. It is a product that you appreciate more and more as you use it. I use *Word* often, but since it can't be programmed, it doesn't tap my creativity in the same way.”

Favorite

game:

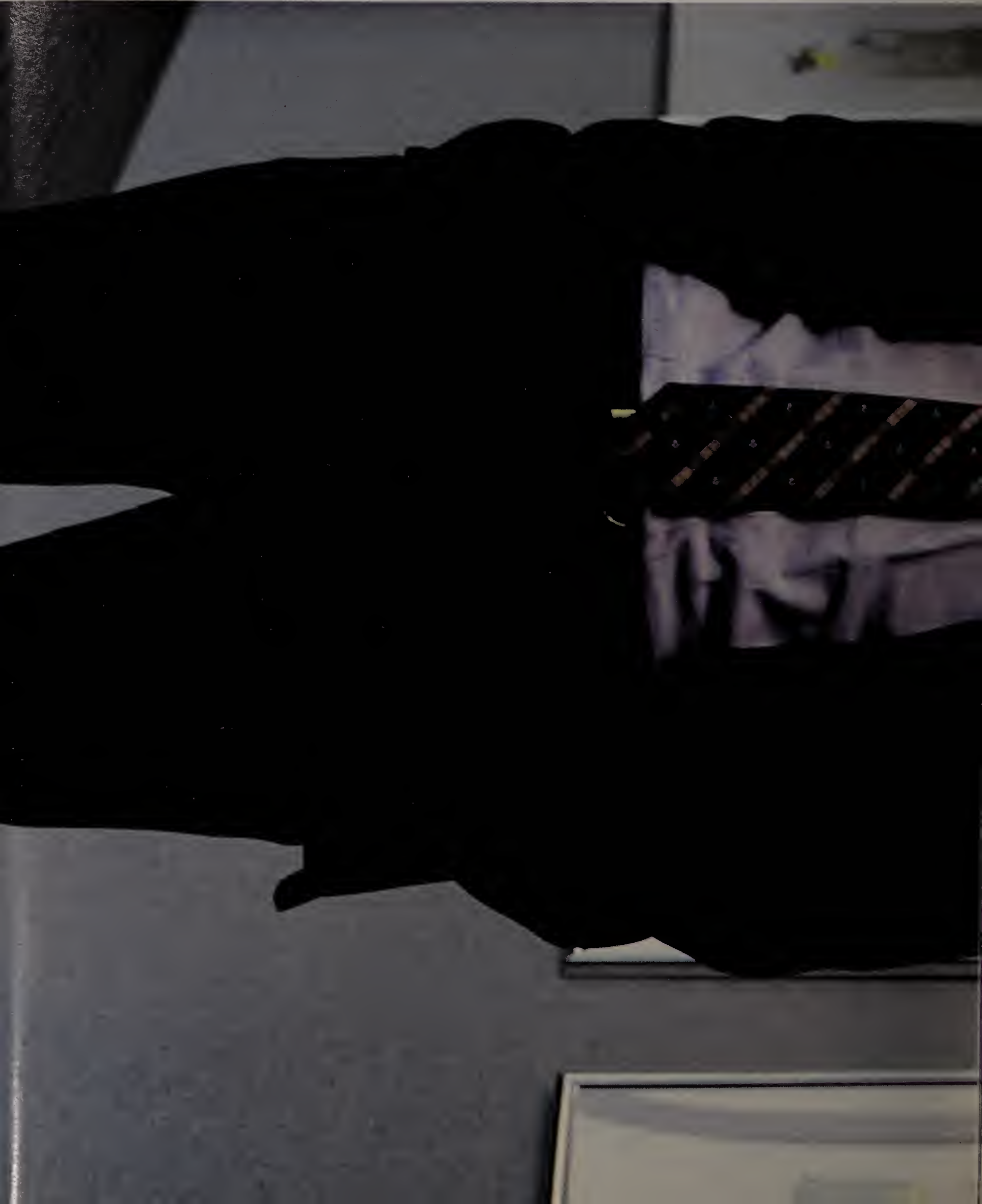
“*Space Wars* on the PDP-1 was my first. Brøderbund's *Lode-Runner* is probably my favorite, since I put a lot of time into getting good at it.”

First

computer

achievement:

“My first real program was a class scheduler for my high school, which was supposed to give people what they wanted while producing minimum conflicts. I was 14 when I wrote it (in FORTRAN!). It was a very real application, and I ended up with a good schedule.”



Bill

Gates

Chairman
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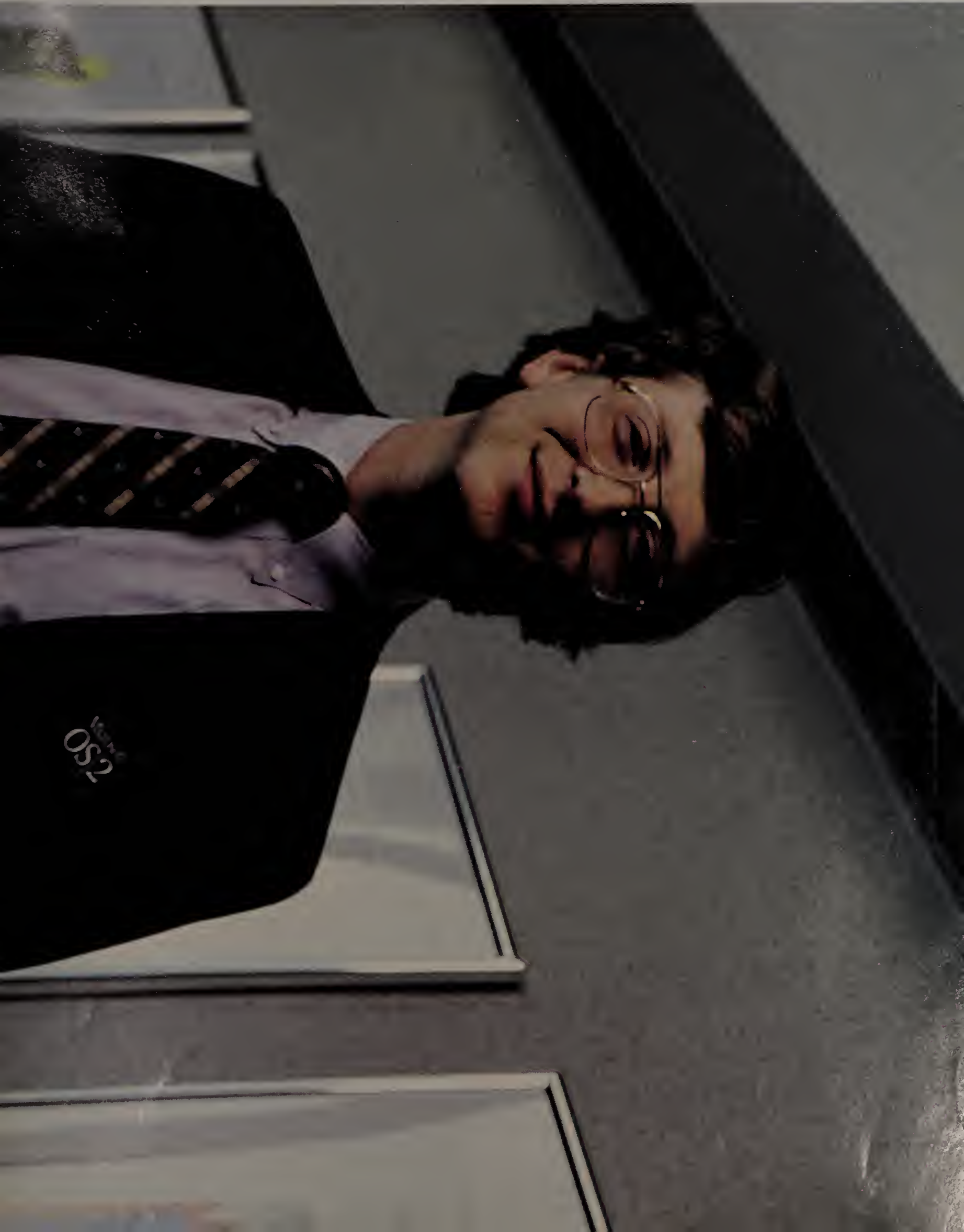
Age:

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Favorite

computer:

"The new IBM Model
80 with 640 by 480
graphics is a leadership
machine. I think that
386 computers with
graphics like this will
be a real popular."



percent. We need to get some history on specific ports to see if we can get those numbers even lower, but yes, you do need to make changes in order to port Windows applications to the OS/2 Presentation Manager.

'IBM was brilliant to use so much of its own technology, yet in the case of two key elements maintain the partnership with Intel on the microprocessor and Microsoft on the operating system.'

PCW: *In the codevelopment effort with IBM, who has control of the final code of the interface? Is it Microsoft? Is it IBM's labs? Is it some committee?*

Gates: We have an existing code base that comes into these products, so we propose a specification, and then it is subjected to various requirements, to see, for example, whether it meets the SAA [IBM's Systems Application Architecture] requirements or if the usability groups like it. That tends to be a reasonably straightforward part of the process. Then we get it out to software developers, and we get a lot of feedback in that process. Eventually we finalize the spec, and we have the last say. But there's great motivation for us to keep a very high percentage of our customers happy, and IBM is at the top of that list.

It turns out that IBM's and Microsoft's goals are very similar: We both want to have a common user interface that is both interactive and fast. IBM's researchers have a lot of graphics expertise, some of which has really helped us in putting together this specification. Those individuals and the expertise they brought to the project had a greater influence on the Presentation Manager than did the GDDM [Graphics Display Device Manager] itself. But it's a Microsoft product. We have to control what goes out.

PCW: *Right, but you are defining a visual interface that is consistent with SAA. That means it will have an impact on IBM products with which Microsoft is not traditionally involved. Wouldn't your control of the Presentation Manager's final appearance affect that whole IBM line?*

Gates: IBM has total control over what gets into SAA, and we have total control over what gets into Microsoft Windows and the Presentation Manager. It just turns out that nobody gave up any control. OS/2 and the Presentation Manager were arrived at by a process in which we proposed a specification and they proposed changes. We came up with a specification that they would make a part of SAA and we would make a part of Windows 2.0 and the Presentation Manager.

There came a point when the seriousness of the SAA requirements became clear to us. Those were make-or-break requirements for IBM as a corporation. We really had to be creative about blending the best of both worlds so that our product would make sense for IBM. PCs are so important for them now, not only from a business point of view but also strategically, in terms of how the user interface will move down to the PCs from larger systems. It's not only ESD that gets involved; it is also IBM's software-and-technology strategy experts at the corporate level, which means that the decisions are very clearly thought through.

Bus Stop

PCW: *The IBM hardware engineers claimed that there was no political motivation for changing to the Micro Channel bus, that it was all performance based. The technical specifications are published, but patents are applied for. Do you have any insights about whether IBM will try to cut the compatibles makers out of the Micro Channel bus?*

Gates: I think people will eventually be able to make a noninfringing compatible bus. But I don't know the specifics, and it's not a very well informed opinion. We only talked to IBM about software issues. Actually, the prototype machines were all locked up; independent hardware and software vendors who were developing machines had no understanding of the Micro Channel until IBM put out the information on April 2.

(continues)



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And Everyone, Its Price.**

New Dac-Easy Accounting destroys the myth you have to trade-off power

for ease of use. Version 2.0 has awesome power plus incredibly easy operation that can help you better manage virtually any type business--fast. You'll have quick, finger-tip access to vital information about cash flow, pricing, inventory turns, sales trends, profitability, and more.

Redesigned in C language, Dac-Easy is amazingly fast in areas such as sorting your files and reporting information. Yet, there's never been an easier accounting package than Dac-Easy Accounting 2.0. With our new, expanded manual and context sensitive help to guide you every step of the way, you'll soon be enjoying the benefits of computerized accounting.

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**General Ledger
Accounts Payable
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Inventory
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Billing
Forecasting**

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- Batch & on-line processing

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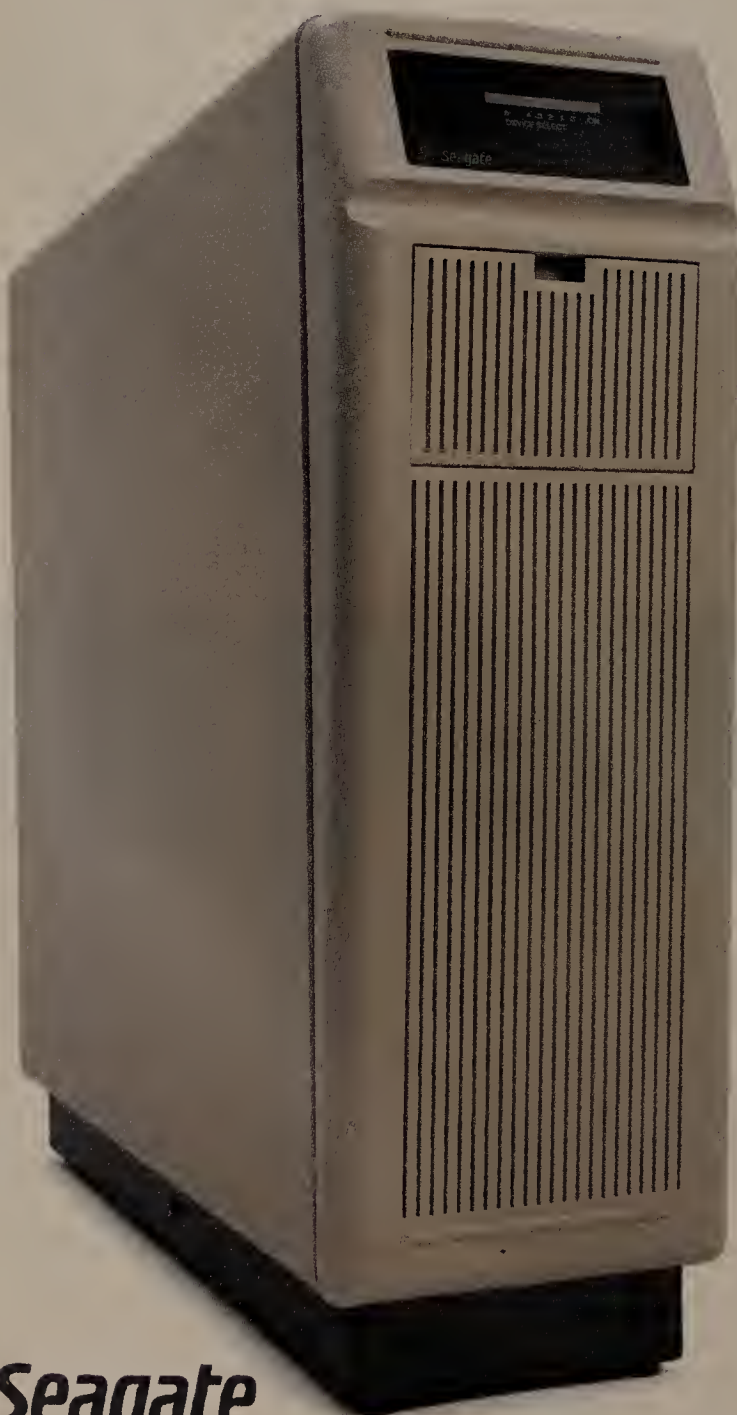
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The benefits of the Micro Channel are also fairly long-term. Having 32-bit data transfers and multiple masters is very nice, but people aren't taking full advantage of the AT bus today. I really can't think of a concrete case in the next two or three years where you're going to notice the performance

'The benefits of the Micro Channel are also fairly long-term. People aren't taking full advantage of the AT bus today.'

difference at the workstation level. The Micro Channel is going to last a long time because it's built around a 32-bit bus. There are good technical reasons for its existence, but I can't think of a scenario where you're going to have an impact on performance in the near term. The performance issues today are micro-processor speed, memory speed, and disk serial-data rate and track-to-track time. Those are the key factors.

PCW: Two other things on the Micro Channel are really attractive: the switchless installation of add-on boards and the ability for multiple devices to act as "masters." How is OS/2 designed to take advantage of those facilities?

Gates: There's no code inside OS/2 that would ever relate to any sort of bus. Device drivers can cause multiple disks to seek in parallel. We've got a nice structure to allow overlapped I/O and multiple outstanding I/O requests, and by overlapping those requests you can schedule multiple seeks. It's not trivial to write a device driver for such tasks, but a good one could do all that nice stuff. So OS/2 itself is not specific to the bus, but it also won't have to be changed as people want to take advantage of the bus. At some point, network servers may have not only multiple disk controllers but also multiple microprocessors, somehow serving requests in parallel.

Nets Profit

PCW: You've stated that OS/2 provides a better networking-platform solution than has been available. Previously, you had to choose between a proprietary operating system or a 640K RAM limitation. When do you think OEMs and network vendors will provide an OS/2 solution that's smooth enough that networking really can take off? When should we expect a boom of really potent networking solutions?

Gates: We see server machines moving over to OS/2 virtually as soon as it's available in early 1988, because OS/2 is a multitasking operating system that will be a standard. The migration towards OS/2 of servers and workstations actually can be looked upon as two separate issues.

People who evaluate departmental servers or departmental resource processors have a pretty long checklist of things they look for: SNA connectivity, X.400 connectivity, an SQL data base, a document library, shared schedule management, and advanced E-mail servers. If you evaluate a PC server for a department, you can't check off most of those things right now—only great file and print service. So by starting work now with these connectivity vendors and data base vendors to get them to build on OS/2, we think that by the time OS/2 and the LAN Manager are out in the first quarter of 1988, we'll have a pretty good set of those tools.

PCW: I was a little disappointed to find that OS/2 wasn't going to fix the 32MB limitation on the size of a disk partition. If we're looking at OS/2 as a platform for six or seven years, will it be able to handle all the facilities we'll need over that period? I'm thinking of media and services that aren't currently considered part of office systems—full-motion video and sound, for example.

Gates: The key thing for us to get right in the first version is the application interface so the software vendors can go out and build on it. We have to make sure, for example, that the interprocess communication and synchronization are very, very rich.

In terms of the file system, what you want is a so-called installable file system where you can bring

(continues)

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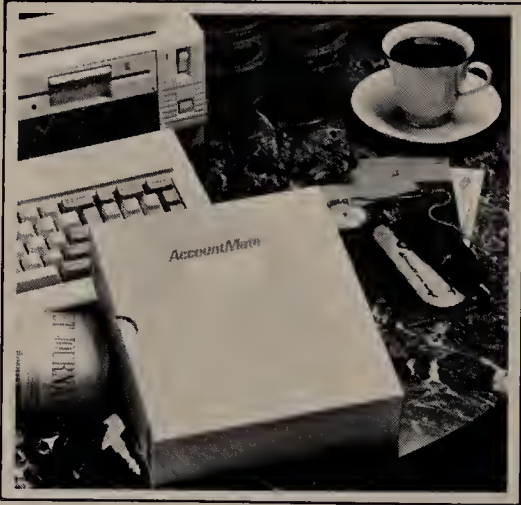
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in a facility that's managing the read/write requests for a device, whether it's a CD ROM or some specialized device. And you want that installable file system to be transparent to the application. An installable file system is in our architecture. We're not committed to it for the first release of OS/2, but fortunately it can be added transparently to the applications. We expect multiple vendors to come out with bigger and faster installable file systems. Microsoft would be a good candidate to put in the CD ROM keys that go beyond the normal file access you have today and guarantee the data rates that will enable interactive video information.

Advice From the Chairman

PCW: *If you weren't the chairman of a multi-million-dollar company with lots of advance notice and inside information, but instead had 30 people to manage, what would you be doing now? What kinds of applications would you be looking at, and how would you be planning for the future?*

Gates: Well, I think users should be aware that all these developments paint an exciting future. But because most of it is based on upward compatibility, they shouldn't necessarily change what they're doing right now. They shouldn't freeze up and think that buying the machines they've been buying is any sort of problem. Their investment in MS-DOS software makes sense because even when they switch over to OS/2, they'll be able to run MS-DOS programs. Their investment in networking or graphics software continues to make sense. There's an incredible continuity in all the things that have been announced.

The only question is when they should make the transition to this new hardware and the new bus. If a full complement of cards is available for the new bus in less than a year, I'd be pretty impressed. How quickly should they change to 3½-inch disks? I think software vendors will respond to that one fairly quickly. For example, Microsoft is putting both disks in the same box for products that retail for over \$200. People should make the transition when they

(continues)

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Timeline 2.0	235

INTEGRATIVE SOFTWARE

Ability	\$ 55
Enable 2.0	\$ 329
Framework II	395
PFS: First Choice	82
Smart Software System 3 I	409
Symphony	449

HARDWARE

PRINTERS

Alps	Call
All Models	Call
Brother Printers	Call
Citizen Printers	Call
120D	169
Diablo	469
D-25	759
635	759
Diconics	299
150	Call
Epson Printers	Call
Hewlett-Packard	1829
Laser Jet Series II	1829
NEC	Call
P-6,P-7,P-9 Series	729
3510, 3550	1045
8810, 8850	1045
Okidata Printers	Call
Panasonic Printers	Call
1092 I	319
Star Micronics	Call
Toshiba	Call
321SL	669
341E	1045
351 Model II	1045

MODEMS

Anchor	Call
Anchor Express	\$ 185
Hayes	Call
300	129
1200	375
1200B	309
2400B	460
Prometheus	125
1200B w/Software	Call
Other Models	Call
US Robotics	149
Password 1200	335
Courier 2400	335
MicroLink 2400	335

COMPUTERS

NEC	Call
Multispeed	Call
Panasonic	\$ 719
Business Partner	969
Sr. Partner	1429
Exec. Partner Dual Drive	1429
Toshiba	Call
T-1100 Supertwist	Call
T-3100	Call
Wyse	1729
286	1729

BOARDS

AST	149
Six Pack Plus	Call
Other Models	Call
ATI	245
EGA Wonder	245
Hercules	145
Color Card	185
Graphic Card Plus	185
Graphics Card	175
Intel	210
Above Board PC	239
PS/PC	239
Orchid	565
EGA	449
Turbo EGA	829
Jet 386 Accelerator/AT	399
Tiny Turbo 286	399
Paradise	99
5 Pack	299
Autoswitch 350	355
Autoswitch 480	355
Tecmar	409
Graphics Master	Call
Other Models	Call
Captain (No Memory)	109
Video-7	315
Vega Deluxe	315

DISK DRIVES

Bernoulli Box	\$ 865
10 Meg	1199
20 Meg	1729
40 Meg	339
Segate 20 MG w/WD Controller	339
Teac	125
1 1/2 MEG AT	119
Toshiba	119
3 1/2" XT	119

MONITORS

Amdek Monitors	Call
NEC	Call
Multisync	\$ 549
Multisync Plus	Call
Other Models	Call
Princeton Graphics Monitors	Call



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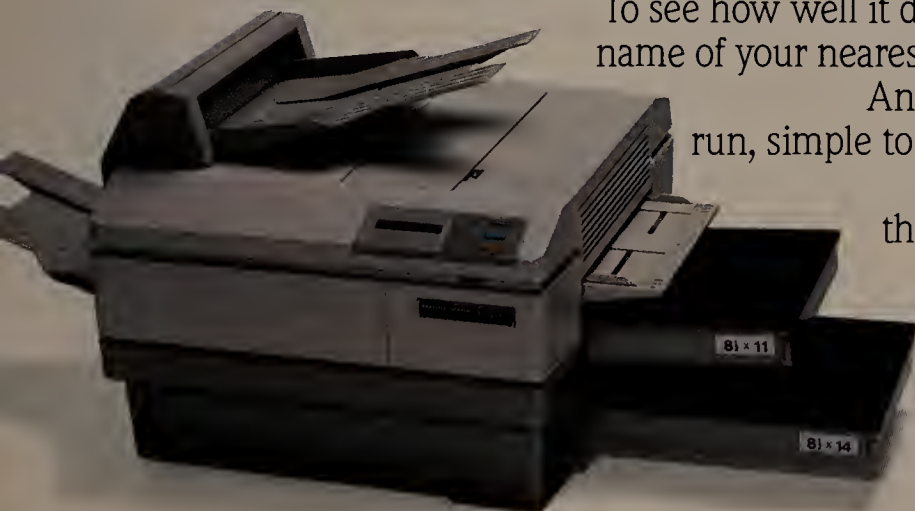
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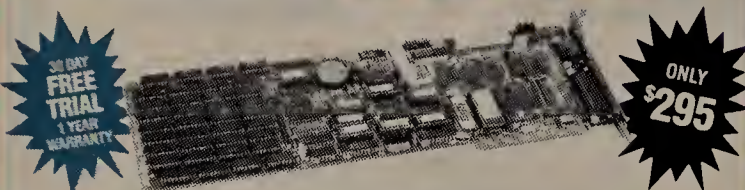
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think it's effective for them. There's nothing that says they've got to switch over right away, because as far as connecting up to a network is concerned, the existing machines with the existing bus and existing disks will work just fine.

As far as running graphically oriented applications, you can do that on top of MS-DOS. At Microsoft we're hopeful that the IBM system and OS/2 announcements will get people to pay serious attention to the graphic user interface. But even that's an evolutionary conversion: When you switch over you can run your old applications and perform data exchange with them.

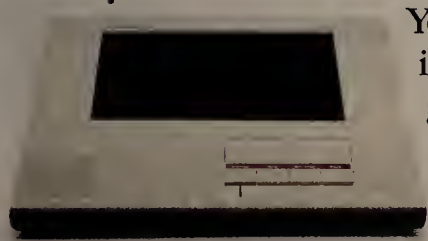
I guess if I were an end user, I might keep buying the current stuff. I think that the people who analyze what the announcement really means will come to the conclusion that nothing has been discontinued. In the short term, if I were buying PCs or XT's, I'd look really hard at switching to either 286s or Model 30s. In terms of price/performance, it doesn't cost much more to build an 8086 machine than one based on an 8088 chip. That's what IBM's shown by not even using the 8088, and I think the other hardware manufacturers will shift over as well. In fact, companies like Olivetti and Compaq are already moving in that direction.

I'd look really hard at PC and XT purchases, but AT purchases aren't a problem at all. It's clear that the 286 is the level that will support the major multitasking operating system. Some people might have wondered if it would happen at the 8086 or the 386 level. The AT can run all the forms of the new operating system, and I think it'll be a long, long time before you'll see some sort of plug-in card that's available only for the new bus. I also think it'll be a long, long time before you'll see a piece of software that comes out in 3½-inch format and not in 5¼-inch format. ●

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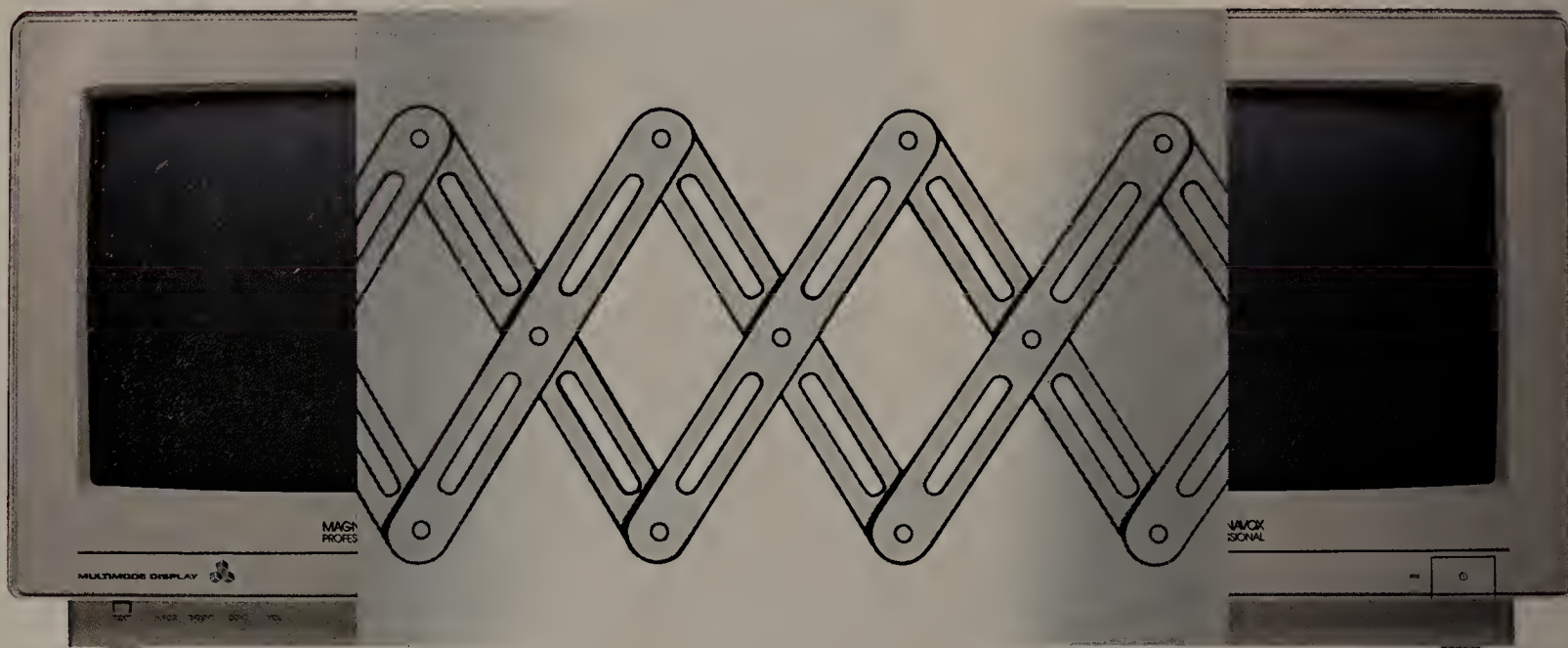
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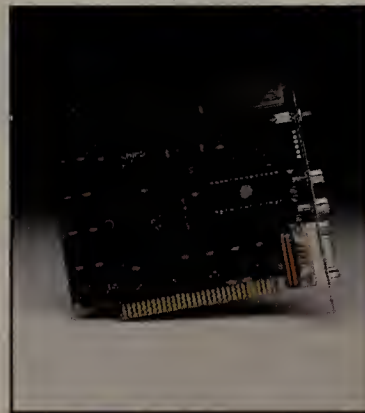
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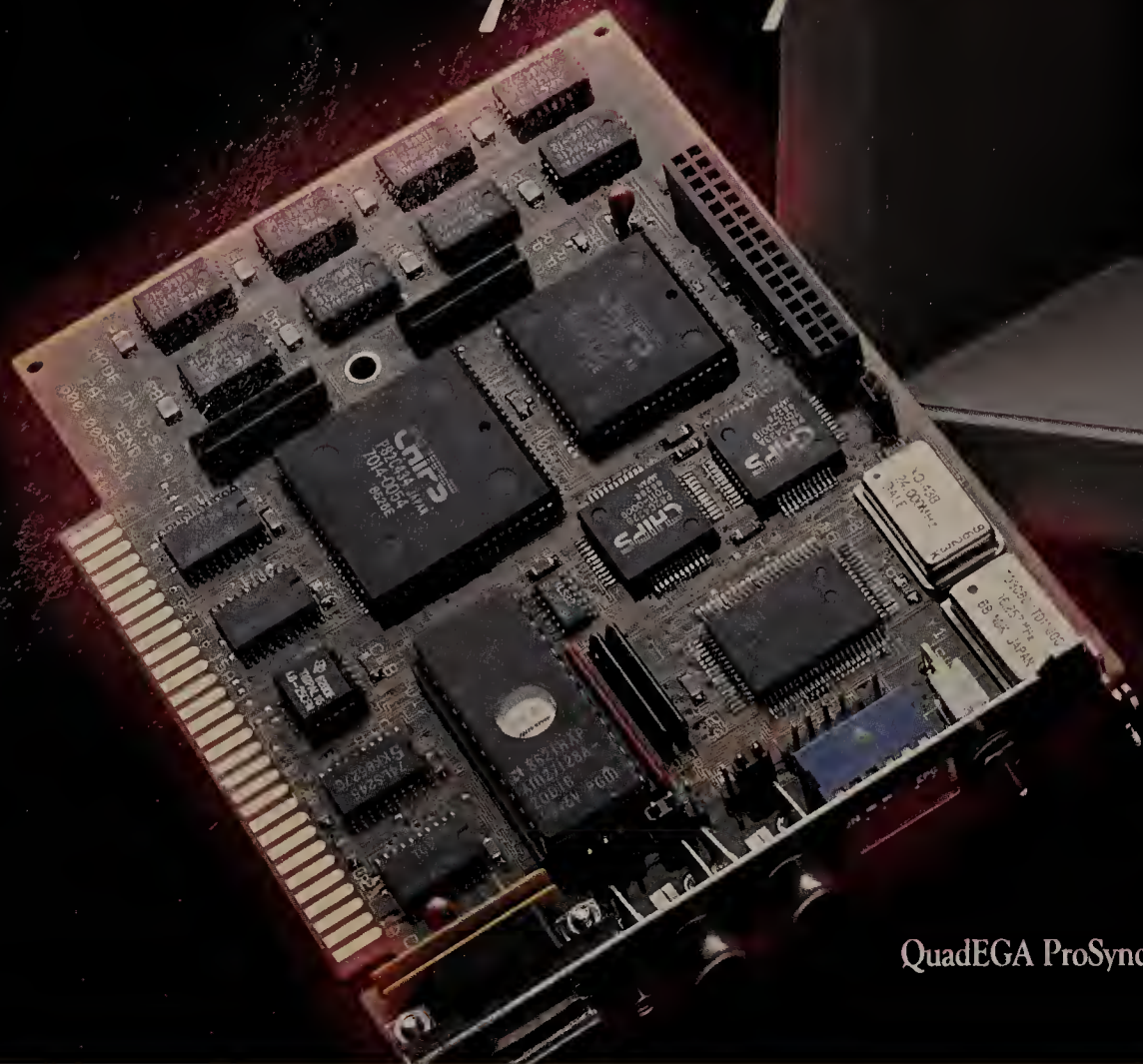
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8. For approximately how many total personal computers or microcomputer systems do you have the above involvement? (check only one)

☐ A. 1-3

☐ B. 4-9

☐ C. 10-19

☐ D. 20-49

☐ E. 50-99

☐ F. 100-499

☐ G. 500 +

9a. How many people work at your location? (check only one)

☐ A. 1-9

☐ F. 1000-2499

☐ B. 10-24

☐ G. 2500-4999

☐ C. 25-99

☐ H. 5000-9999

☐ D. 100-499

☐ I. 10,000 or more

☐ E. 500-999

9b. How many people are employed by your entire company? (check only one)

☐ A. 1-9

☐ F. 1000-2499

☐ B. 10-24

☐ G. 2500-4999

☐ C. 25-99

☐ H. 5000-9999

☐ D. 100-499

☐ I. 10,000 or more

☐ E. 500-999

10. What percentage of people who work at your location actually use a personal computer? (check one only)

☐ A. 1-24%

☐ D. 75%-100%

☐ B. 25%-49%

☐ E. None

☐ C. 50%-74%

11. The personal computers purchased for this location are: (check all that apply)

☐ 1. For internal use

☐ 2. For resale

☐ 99. Other (please specify) _____

12. How are personal computers normally obtained for this location? (check all that apply)

☐ 1. Direct from manufacturer

☐ 2. Manufacturer's representative

☐ 3. Distributor or wholesaler

☐ 4. Retail computer store

☐ 5. Mail order

☐ 6. VAR/systems house

☐ 7. In-house (company or university store)

☐ 99. Other (please specify) _____

13. Personal computers or microcomputer systems at your location are or soon will be used for the following activities: (check all that apply)

☐ 1. Communicate with internal company mainframe or mini

☐ 2. Communicate with other micros via modem

☐ 3. Communicate with outside mainframe or mini through service bureau, database, or time-sharing service

☐ 4. Local area network

☐ 5. Desktop publishing

☐ 6. Desktop engineering/CAD/CAM/CAE

☐ 7. Presentation graphics

☐ 8. None of the above

☐ 99. Other (please describe) _____

14. Over the course of one year, how would you quantify your level of involvement in total microcomputer systems products?

☐ Recommend

☐ Influence

☐ Specify

☐ Buy

(check all that define your involvement)

(check only one)

☐ 1. Less than \$10,000

☐ 5. \$100,000-\$249,000

☐ 2. \$10,000-\$24,999

☐ 6. \$250,000-\$499,999

☐ 3. \$25,000-\$49,999

☐ 7. \$500,000 +

☐ 4. \$50,000-\$99,999

☐ 8. None of the above

15. Are you involved in any of the areas shown below?

☐ Yes (check all that apply)

☐ No

☐ Recommend

☐ Influence

☐ Specify

☐ Buy

(check all that define your involvement)

Software

☐ 1. spreadsheets

☐ 2. word processors/outline processors

☐ 3. database management

☐ 4. accounting

☐ 5. statistics

☐ 6. communications/networking

☐ 7. analytic graphics

☐ 8. presentation graphics

☐ 9. project management

☐ 10. desktop publishing

☐ 11. CAD/CAM

☐ 12. programming/languages

☐ 13. utilities

☐ 14. micro-to-mainframe

☐ 15. other (specify) _____

Peripherals

☐ 24. dot matrix printer

☐ 25. letter quality printer

☐ 26. plotter

☐ 27. laser printer

☐ 28. local area network

☐ 29. file server

☐ 30. optical disk

☐ 31. monochrome monitor

☐ 32. color monitor (standard)

☐ 33. hi-res color monitor

☐ 34. add-on board

☐ 35. external hard disk

☐ 36. internal hard disk

☐ 37. back-up systems

☐ 38. modem

☐ 39. other (specify) _____

Computers

☐ 16. personal computers

☐ 17. multiuser microcomputers

☐ 18. laptop microcomputers

☐ 19. portable microcomputers

☐ 20. engineering workstations

☐ 21. minicomputers

☐ 22. mainframe computers

☐ 23. other (specify) _____

Outside Services

☐ 40. on-line services

☐ 41. education/training

☐ 42. maintenance

☐ 43. custom applications

☐ 44. service bureau

☐ 45. other (specify) _____



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☐ Yes ☐ No

SIGNATURE _____

TITLE _____

DATE _____

- ☐ 7. Engineer/scientist
- ☐ 8. Administrator
- ☐ 9. Consultant/advisor
- ☐ 10. Microcomputer specialist/manager/
analyst
- ☐ 11. Programmer
- ☐ 12. Educator
- ☐ 13. Professional (lawyer, doctor, etc.)
- ☐ 99. Other (please specify) _____

☐ Yes ☐ No

	Existing (quantity)	Plan to buy (quantity)
☐ 1. IBM	_____	_____
☐ 2. DEC	_____	_____
☐ 3. Hewlett-Packard	_____	_____
☐ 99. Other (specify)	_____	_____

- ### Non-computer related businesses

- ☐ 1. Aerospace
- ☐ 2. Agriculture, mining, construction, oil
- ☐ 3. Business consulting (non-computer related)
- ☐ 4. College/university
- ☐ 5. Elementary/high school
- ☐ 6. Engineering/architecture
- ☐ 7. Finance/banking/accounting/insurance/real estate
- ☐ 8. Government
- ☐ 9. Health/medical services
- ☐ 10. Legal services
- ☐ 11. Manufacturing
- ☐ 12. Military
- ☐ 13. Other business services
- ☐ 14. Publishing/advertising/public relations
- ☐ 15. Research & development
- ☐ 16. Retail/wholesale
- ☐ 17. Transportation/communications/utilities
- ☐ 99. Other (please specify) _____

Computer-related businesses

- ☐ 18. Computer consultants
- ☐ 19. Computer retail stores
- ☐ 20. Distributor/wholesalers
- ☐ 21. Manufacturer (computers, software, peripherals)
- ☐ 22. Service bureau
- ☐ 23. VAR/systems house/integrator
- ☐ 99. Other (please specify) _____

- 2. Title (check only one)**

- ☐ 1. Chairman/president/owner/partner
- ☐ 2. Vice president
- ☐ 3. Controller/treasurer/accountant
- ☐ 4. Director/supervisor/manager
- ☐ 5. Project manager/chief/group leader
- ☐ 6. Art director/writer/creative head/technical writer

- 3. Department or function (check only one)**

- ☐ 1. Accounting/finance
- ☐ 2. Administration/management/personnel
- ☐ 3. Consulting
- ☐ 4. Education/training
- ☐ 5. Engineering/R&D
- ☐ 6. Manufacturing/production
- ☐ 7. Microcomputer center/office automation
- ☐ 8. MIS/DP
- ☐ 9. Purchasing
- ☐ 10. Sales/marketing/distribution
- ☐ 99. Other (please specify) _____

4. What windowing environment do you currently use?

- ☐ 1. DESQview
- ☐ 2. GEM
- ☐ 3. IBM GDDM
- ☐ 4. Macintosh
- ☐ 5. Microsoft Windows
- ☒ 6. SUN NEWS
- ☐ 7. XWindows
- ☐ 8. None
- ☐ 99. Other (specify) _____

- 4a. If you do not currently use a windowing environment, which are you considering for your workstation(s)? (Check all that apply)**

- ☐ 1. DESQview
- ☐ 2. GEM
- ☐ 3. IBM GDDM
- ☐ 4. Macintosh
- ☐ 5. Microsoft Windows
- ☐ 6. SUN NEWS
- ☐ 7. XWindows
- ☐ 8. None
- ☐ 99. Other (specify) _____

- ☐
- Yes
- ☐
- No

- ☐
- Yes (indicate quantity below)

- ☐
- No

		Currently own (quantity)	Plan to buy within	
Manufacturer			1-12 Mos. (quantity)	13-24 Mos. (quantity)
☐	1. IBM PC	_____	_____	_____
☐	2. IBM XT	_____	_____	_____
☐	3. IBM AT	_____	_____	_____
☐	4. IBM RT	_____	_____	_____
☐	5. IBM Personal System/2	_____	_____	_____
☐	6. IBM Compatible (Compaq, Tandy, etc.)	_____	_____	_____
☐	7. Macintosh Plus	_____	_____	_____
☐	8. Macintosh SE	_____	_____	_____
☐	9. Macintosh II	_____	_____	_____
☐	10. Sun/Apollo workstation	_____	_____	_____
☐	99. Other scientific or engineering work- stations (non-mini)	_____	_____	_____

- 7. Please indicate your involvement with each of the following types of personal computers or microcomputer systems.**
(check all that apply)

		Micros	Software	Networks & peripherals
☐	1. Approve purchase	_____	_____	_____
☐	2. Develop or manufacture	_____	_____	_____
☐	3. Evaluate or select vendors	_____	_____	_____
☐	4. Own (at least one)	_____	_____	_____
☐	5. Own (two or more)	_____	_____	_____
☐	6. Purchase or acquire	_____	_____	_____
☐	7. Establish specifications	_____	_____	_____
☐	8. Recommend to others	_____	_____	_____
☐	9. Sell them	_____	_____	_____
☐	10. Train people to use/ or provide support	_____	_____	_____
☐	11. Use them	_____	_____	_____
☐	99. Other (please describe by name and quantity)	_____	_____	_____
	No involvement	_____	_____	_____

If you have no involvement with any of the above, skip to question 9.

(Please answer questions on reverse side.) •

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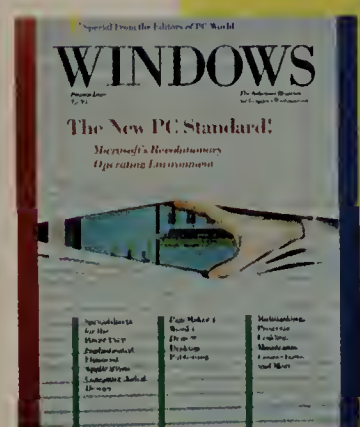
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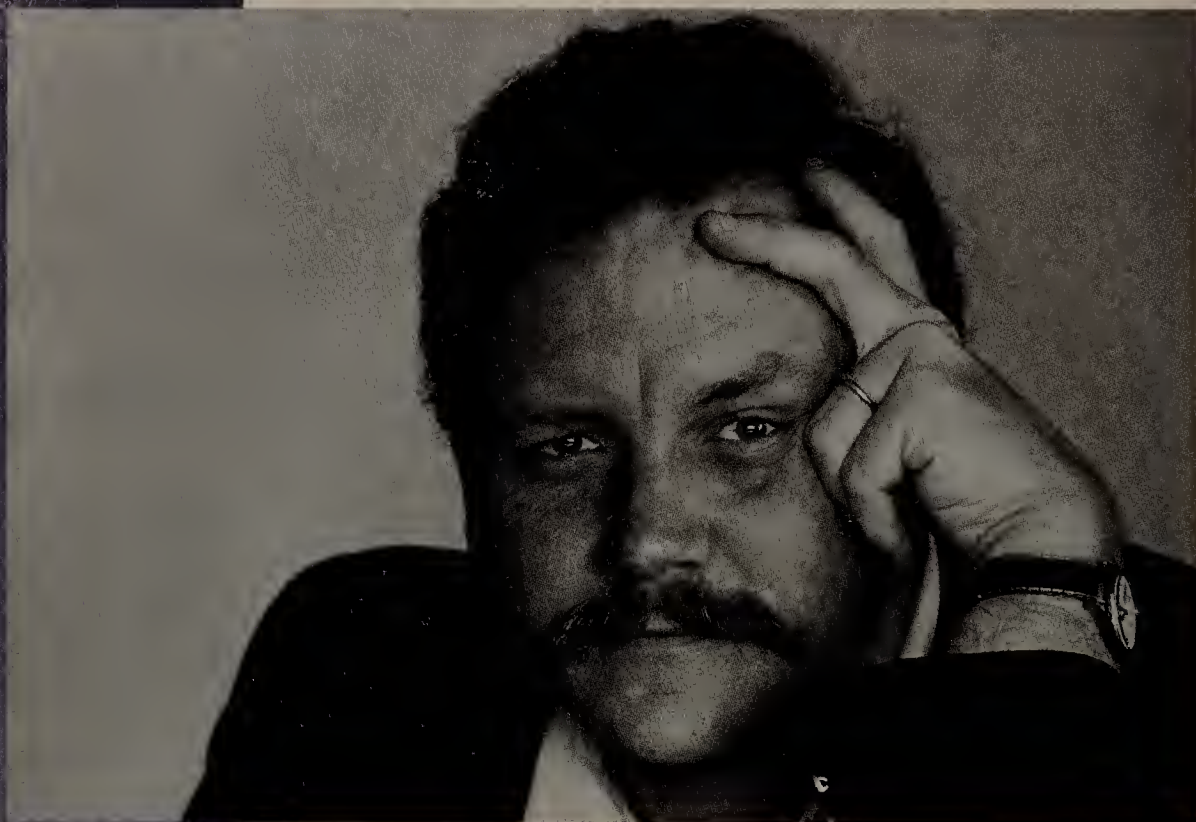
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1987

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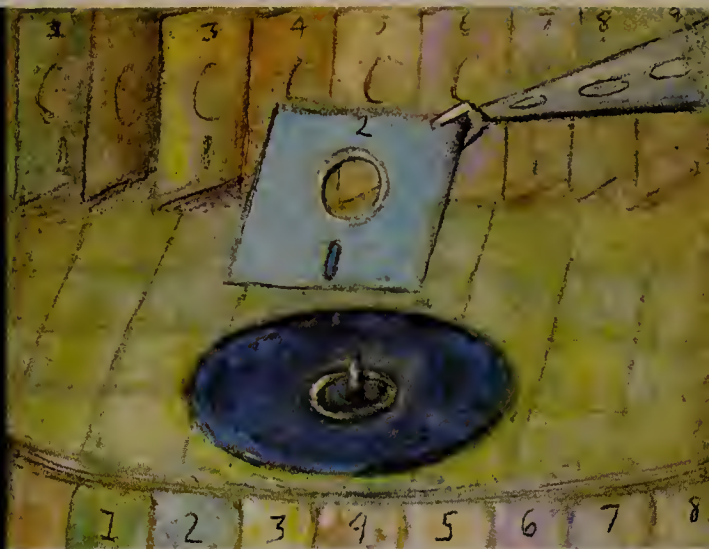
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and make your work life

**more productive.*



COMMUNICATIONS
204

WORD PROCESSING
218

PUBLISHING
228

DATA MANAGEMENT
236

SPREADSHEETS
248

GRAPHICS
264

FINANCE
278

APPLICATION DEVELOPMENT
288

UTILITIES
292

COMMUNICATIONS



Andrew Sachar

EXPRESS

SMARTCOM II

PC-TALK4

TOPS 1.02

KNOWLEDGE NETWORK 8.03

July 1987

Shortcut to Data Sharing

*With Lotus's Express
and MCI Mail,
communications
just became the
productivity booster
it was always
meant to be.*

RICHARD LANDRY



Once you've sampled the benefits of electronic mail, you're hooked. An E-mail service such as MCI Mail enables you to reach out and touch remote offices, thereby circumventing the expense of overnight mail or the bother of telephone tag. The reward is fast response to queries and less wasted effort—and a sharp rise in productivity.

Most users traveling the E-mail route, however, have had to contend with a trio of aggravations: the need to interrupt normal work to monitor and manage a mailbox, wrestling with an interface that makes UNIX seem positively chummy, and the inability to send and receive other than straight ASCII files. Transferring binary files (such as worksheets, formatted text files, graphs, images, and program code) and telexes required a descent into the murky underworld of PC-to-PC communications.

That was the state of affairs until now. Thanks to Lotus Development's *Express*, MCI Mail users can now share it all. They can exchange ASCII and binary files with other MCI Mail subscribers, send telexes, fill in and swap data entry forms, and manage correspondence—all under an efficient, easy-to-use interface, and all without leaving their current, active application.

These capabilities have endowed PC communicators with power unheard of in the days when *PC-Talk III* was state-of-the-art. *PC-Talk* still sets a high standard for efficiency and flexibility, but you need to know the ins and outs of communications protocols to put it to good use. *Crosstalk XVI* and packages like it sweeten

the pot with sign-on scripts for the major on-line services and command languages that help you design custom scripts for other purposes. Of course, once you've signed on you're at the mercy of the service and its quirks unless you're a fairly capable programmer. Not only must you learn a different set of commands for each service you use, you must personally manage the process of sending, receiving, and filing messages—a tedious, time-consuming endeavor at best.

Operating in the background, a program like Cygnet's *Get* notifies you when a message awaits in your mailbox, but it does little more. And while LCS Telegraphics' *TeleVision* specializes in transmitting graphics and other binary files via modem, it lacks E-mail support.

To date, only *Microsoft Access* offers a user interface that operates consistently across a variety of on-line services and provides a mechanism for managing incoming and outgoing correspondence. But with *Access*'s painfully slow performance and cumbersome command structure, even Microsoft privately acknowledges that few *Access* owners bother with the Mail interface. As if to underscore that apathy, Microsoft hasn't even bothered to upgrade the Mail script for MCI Mail's new binary file capability.

Express is a one-stop solution to the problem of data sharing by telephone; in its power and ease of use, it resembles E-mail services hosted on LANs or PBXs. But its

overall simplicity betrays communications' continuing status as an uncertain art, in some ways less advanced than any other PC application genre.

Express is less than a full-featured communications program. As a terminal emulator it's even less powerful than *PC-Talk*, so don't toss your old communications program if you have ambitions to connect to more than MCI Mail. And like a fractious adolescent, *Express* has a hard time coping with the real world—in this case the realities of dropped connections and line noise. If you work in an area in which MCI Mail use is heavy and connection mishaps commonplace, you'll frequently have to restart your computer just to right a wayward modem. And when the *Express* documentation calls for Hayes Smartmodems or "true

compatibles," you'd better believe it. *Almost* compatible won't be enough.

But when everything is go, *Express* operates like a charm. Relying on the same program core as *Metro*, Lotus's 12-in-1 memory-resident productivity tool (see "Metro Traffic Control," *PCW*, June 1987), *Express* uses a *Symphony*-like menu across all its components. *Express* consists of four separate *Metro* accessories: the principal program, called the Reader, which helps you manage your correspondence and routes incoming and outgoing messages; the Communications Manager, which sets communications parameters and allows you to add, change, and delete mailboxes; the Terminal, a stripped-down pro-

Lotus Express Reader 1.00				4-86-87	7:46p
Folder: INCOMING [12 of 201] ** DISABLED **					
				F1/Help	
&	4-01	8:38p	Harry Miller	Here's Eric...	
&		8:39p	Harry Miller	Here's Harry...	
	4-02	9:28a	Ken Greenberg	PC Talk	
&	4-03	7:55a	Eric Bender	Personal Systems	
		7:58a	Eric Bender	Ascii Personal Systems	
		11:25a	Kevin Strehlo	Strehlo's column	
		11:49a	Kevin Strehlo	Contact information, correction	
		1:48p	Ken Greenberg	Getts	
	4-04	12:55p	Ken Greenberg	More talk	
&		11:21p	Harry Miller	Bender Read	
&		11:23p	Harry Miller	HM 5-6 Column read	
	4-05	3:21p	Ken Greenberg	Express	
		3:28p	Ken Greenberg	More Express	
	4-06	1:38a	Ken Greenberg	Looking bluish	
		1:46a	Ken Greenberg	RE: Smartcomm and other things	
		1:47a	Ken Greenberg	Re: 2 items	
		6:24a	Eric Bender	housekeeping	
		6:25a	Eric Bender	Hayes	
		9:42a	Eric Bender	Re: Hayes	

At the heart of *Express*, the Reader enables you to efficiently manage incoming and outgoing correspondence, develop mailing lists, and create and alter data entry forms.

gram for direct connection to MCI Mail, other on-line services, or another PC; and the Viewer, an optional utility that lets you monitor MCI Mail sessions to check on their status and detect any problems that might be plaguing them. *Express*'s Helper facility will give you a brief overview of your current place in the program.

You set *Express* in motion with a simple installation utility that copies the program files and the included *Metro* core to your hard disk. (If you are already using *Metro*, take note—*Express* installation overwrites *Metro*'s established configuration.) The installation program also sets up directories for incoming and outgoing correspondence and opens your primary mailbox. To help the process along, you provide your MCI Mail user name and password, the local MCI telephone number, and your modem's speed and the COM port to which it is assigned.

Users lacking a hard disk should think twice before purchasing *Express*. To operate the program on a 5¼-inch floppy-based system, you must partition it among three—count 'em, three—floppy disks, two of which must occupy drives A: and B: any time you poll for mail. This means, of course, that you can't run *Express* with other applications.

Once the program is installed, you enter the Communications Manager to set such parameters as the frequency with which *Express* should poll your mailbox. (Inexplicably, you can't tell *Express* when to poll for mail—only the number of hours it should wait between tries, from a minimum of 1 hour to a maximum of 24.) You

can also set up and poll MCI mailboxes for as many as nine accounts, a useful option for managing a work group's E-mail correspondence.

After setup, *Express* operates in the shadow of your foreground application, dialing MCI at specified intervals, shipping off outgoing correspondence, pulling down mail, and notifying you of any new messages received. New mail is collected in a directory (*Express* calls it a folder) marked Incoming. Mail that includes one or more binary file attachments, was not received intact, or was forwarded from another individual is clearly identified. From within the Reader you can reply to the message, delete it, file it in any folder of your creation, or write it and any binary attachments to disk. You can also compose new messages and attach binary files to them or insert straight ASCII files created in another application into the message you're currently composing. You simply indicate the path and file names under the Filing Insert option. This last feature is handy if you're corresponding with MCI users who lack *Express*.

Such efficient mail handling may be appealing in and of itself, but *Express*'s real payoff resides elsewhere. For those who regularly exchange financial information or formatted documents, *Express* beats the alternatives—direct modem-to-modem communication and overnight mail—hands down.

If users at each end of the MCI link are equipped with *Express*

and the same application program, they can swap worksheets all day long without once communicating directly or interrupting their regular work. If you've ever played telephone tag with an elusive partner or spent 24 hours and \$15 to get up-to-date sales figures, you'll appreciate this benefit. *Express* also includes a special forms feature—useful if remote offices must call in sales orders. You can turn the order form around in the twinkling of an eye, maintain an audit trail of your transaction, and even attach a delivery receipt to your reply.

Does all this sound too good to be true? At times, it is. *Express* falls down in several small ways and a few big ones. Users who

Executive Summary

Express

Communications program

As an efficient way to transfer ASCII and binary files among users of MCI Mail, *Express* can't be beat. On hard disk systems the program operates in the background to handle incoming and outgoing MCI correspondence under a familiar Lotus-style interface. An anemic facility to handle non-MCI correspondence and an inability to recover gracefully from communications mishaps mar otherwise superb performance.

Installation and setup	<i>Excellent</i>
Mail management	<i>Excellent</i>
Terminal emulation	<i>Poor</i>
Error handling	<i>Fair</i>
Overall value	<i>Excellent</i>

lack dedicated modem lines may be irate the first time *Express* cuts in on a conversation and starts dialing for mail. For them, mail polling may be best performed on a request-only basis. Even then, you may not know for sure when *Express* completes a polling session, since the program notifies users only when new mail is received. To keep tabs on *Express*'s use of the line, these users will need to install the Viewer and monitor the mail sessions; unfortunately, that option consumes extra RAM.

Neither is *Express* exactly a good neighbor in RAM. Program code grabs about 150K, making it impossible to use *Express* with large applications like *Framework II*, *Paradox*, and Lotus's own *Manuscript*. With *Metro* also in memory, you're best advised to set aside 200K. And Lotus somehow didn't see fit to design either *Express* or *Metro* to take advantage of expanded memory—a curious omission for one of the originators of the expanded memory standard.

Lotus claims that you can run *Express* as a stand-alone application. In fact, *Express* cannot run as a true foreground program that kicks itself out of memory when you quit it, even though utilities like *Tornado Notes* prove that approach effective. Also, the *Express* manual contains a list of incompatible programs as long as a con artist's rap sheet. Among the forbidden: *Desqview*, *Microsoft Windows*, *XTree*, *SuperKey*, and *Keyworks*.

It's also little comfort that Lotus has passed the *Express* support buck to MCI, whose help

lines don't have a sterling reputation. Although most user difficulties may well stem from the vagaries of telecommunications, MCI service reps are unlikely candidates to diagnose the problems that occur when memory-resident utilities try to tango.

But these snags shouldn't stop you from getting full value from *Express* here and now. As an easy-to-use program that takes the effort out of telecommunicating and turns it into a virtually automatic process, *Express* has no peer. Even more to the point, it gives the nation's 400,000 MCI Mail users the only available way to transfer binary files easily and efficiently. If you've wondered when communications programs will catch up to the rest of the PC world, that day has come. ●

|| Richard Landry is Managing Editor of PC World.

Express
 Lotus Development Corp.
 55 Cambridge Pkwy.
 Cambridge, MA 02142
 800/345-1043
 List price: \$100
 Requirements: 256K (320K for DOS 3.00 or later version), Hayes-compatible modem, MCI Mail (one-year subscription included with purchase, MCI usage fees extra), DOS 2.00 or later version
 Not copy protected

Smartcom: A Standard Lumbers Forward

*It has only a dash
 of state-of-the-art
 pizzazz,
 but Hayes's mainstream
 offering has become
 a little smarter.*

DANIEL J. ROSENBAUM



Smartcom II is an excellent lesson in how to create a software standard—and how to hold on to a healthy market share without incorporating every feature in sight.

To attain the status of a software standard, first piggyback the program on a de facto hardware standard. (It helps if you control that standard, too.) Second, don't copy protect it. Third, keep it functional rather than flashy. And fourth, give it away—at least part of the time.

Hayes Microcomputer Products followed this recipe with *Smartcom II*, to good effect. Hayes hands out the program with each internal modem it sells and offers it as a stand-alone product for \$149. *Smartcom* is simple to use and can be copied freely onto a hard disk.

Sound familiar? A similar strategy made *WordStar* a grand success. But also like *WordStar*, *Smartcom* has steadily lagged behind its rivals in key features. While Hayes has broadened the product significantly in the last two years (see *From the Software Shelf*, PCW, April 1985), it still lacks some popular bells and whistles.

Smartcom II version 2.2 lets you store just 25 phone numbers and associated communications parameters. Other programs support 100 or more, a boon to bulletin-board aficionados and heavily wired businesses. *Smartcom* supports only three error-checking protocols—two versions of XMODEM and one proprietary to Hayes—although support for

Kermit and other protocols is extremely useful in mixed communications environments.

Smartcom lacks a command language. In addition, the program emulates only four terminal types—DEC VT 52 and VT 100/102, Televideo, and TTY—which leaves such standards as ANSI and Wyse out in the cold.

Smartcom doesn't support simultaneous sessions over a packet-switching network such as Tymnet. Only with release 2.1 did *Smartcom* begin to support directories, and even now accessing directories other than the current one is not as simple as it should be. (Gaining entrée to another directory is a three-step process, executed from the main menu.) And *Smartcom* grabs complete control of the screen, so RAM-resident utilities can't pop in.

Other communications programs address these shortcomings in whole or in part, often for less than \$149. What, then, does *Smartcom* offer?

Simply Smart

Smartcom's major assets are simplicity and automation—two attributes not always present in PC communications software.

If your needs are limited to point-and-shoot telecommunications, *Smartcom* remains a fine choice. The program is menu-driven, and all of its functions are accessed by selecting a number between 0 and 9 from either the top-line keys or the numeric keypad. Accessing submenus likewise requires only a single keystroke. Comprehensive help is always available by pressing <F2>.

Smartcom packs a powerful potential for automation. Each

phone number can be equipped with up to 26 macros, including one log-on script that executes automatically. (Multiple macros can handle multiple tasks on an information utility like CompuServe. For example, you can send your mail with one macro and log on to a special-interest group with another.)

Additionally, the program can learn 26 batch scripts, including one that runs whenever the program is started. (Batch scripts typically carry out communications tasks at preset times—such as after midnight, when rates are low.) In fact, because a batch script can be created by recording your keystrokes, *Smartcom*'s script language might be viewed as redundant.

Executive Summary

Smartcom II

Communications package

Hayes's communications software mainstay still lacks frills found in many rivals, but *Smartcom*'s simplicity and automation make it a good choice for users without esoteric needs.

Ease of setup	Good
Session automation	Good
Terminal support	Fair
Protocol support	Poor
Error handling	Excellent
Ease of use	Excellent
Overall value	Fair

All telephone list, macro, and batch data resides in a file called SCOM.DAT, making it easy for a micro manager to compile the information once and then distribute it to all users. And it's just as simple to insulate naive users from arcane program operations, advising them only to "push that button over there."

Among *Smartcom*'s small but helpful touches is a rudimentary text editor. This enables you to download electronic mail, log off, compose a response, log on, and upload the answer—all without leaving the program. Lacking such amenities as word wrap, the editor provides an absolute minimum of text processing, but it can spare you considerable bother.

Setting up the system is quick; the toughest part is remembering whether a certain piece of setup information affects the overall program or merely a particular phone entry. You can page through most of the choices by pressing <CursorLeft> or <CursorRight> and move through the entries one at a time by pressing <CursorUp> or <CursorDown>.

As *Smartcom* has matured, its setup menus have harbored an increasing number of options. The program supports the Hayes Transet 1000 multifunction communications accessory, which accounts for several entries by itself. *Smartcom* also supports Bell, CCITT, and direct communications protocols at speeds of up to 9600 bps, so paging through all the choices can be a little daunting.

In all, the configuration menu includes 27 entries, with 32 more

options available for each phone entry. Most choices are of the "set it and forget it" type, and you'll never tinker with many of the others, but it's nice to know they're all available.

Branching out to a local area network? You can stay with *Smartcom* by buying a separate product, *Smartcom II for the PC Network*. Priced at \$599 for five users, the package runs on both IBM's PC Network and the Token-Ring.

Despite some shortages in the features department, *Smartcom II* is well equipped for standard communications. Other programs are flashier, able to support more protocols or handle more phone numbers; some are even cheaper. But if your needs are straightforward or ripe for *Smartcom*'s automation, Hayes's venerable package may well be the right choice. And if it comes bundled with a Hayes internal modem, you can't beat the price. ●

Daniel J. Rosenbaum writes frequently on computers and communications.

Smartcom II
Hayes Microcomputer Products
P.O. Box 105203
Atlanta, GA 30348
404/441-1617
List price: \$149
Requirements: 192K, DOS 2.00
or later version
Not copy protected

Talk Isn't Free (Any More)

*Although it may now
be clad in pinstripes,*

Headlands

Communications'

PC-Talk4

*is showing the
commercial world
a familiar face.*

JUDY GETT'S



Who would have thought that *PC-Talk*, that trailblazer of freeware and prince of the public bulletin boards, would one day see shrink wrap? Indeed it has, and you need look no further for evidence than the licensing notice that accompanies the latest incarnation of the popular communications program, complete with fine print befitting IBM.

Of course, in the personal computer business, nothing succeeds like success—which *PC-Talk* has enjoyed in spades. The venerable communications package thus joins other freeware offerings that have graduated to the checkout stand. So it should come as scant surprise that the program has gone corporate—if not visibly, at least in karma.

Aside from the copyright warning that pops up where the old encouragement to ‘copy and share this program’ used to be, *PC-Talk4* loads and looks pretty much like *PC-Talk III*. The familiar help line adorns the bottom of the screen, proffering its list of basic commands. <Alt>-D brings up the dialing directory, <Alt>-K the function key listing, and <Home> a help window summarizing the full universe of *PC-Talk* commands. Like its granddaddy, it’s even written in BASIC.

So what’s new about *PC-Talk4*? Relatively little. In fact, if you’ve ever used *PC-Talk III*, someone could slip you a copy of the fresh version and you’d probably never suspect a thing. It’s true that this edition includes a pastiche of minor improvements, the kind

PC-Talk has long deserved: support of other than the current directory, a beefed-up dialing directory, the ability to run at 9600 bps as well as 2400 bps, DEC VT 100 and VT 52 terminal emulation, a DOS shell, a mini script language, and a reasonably cogent manual—not to mention the all-important command to “silence alarms and bells.”

But many more modifications could still be made—and some *need* to be made. *PC-Talk4* includes support for the cyclical redundancy check (CRC) XMODEM protocol, where *PC-Talk III* offered only checksum, but why not Kermit, Telelink, or MNP (Microcom Networking Protocol)? In the realm of terminal emulation, why does the program mimic only DEC terminals, when much of the PC community is eager for IBM 3101 emulation? And, unfortunately, the program still lacks an elegant way to change settings while you’re on line.

The program does retain its simplicity and familiarity. If you’ve been using *PC-Talk* for many years, this move to enhance the product is welcome. But some of the new features suffer from offhand implementation, some could use another round or two at the designer’s table, and some just don’t go far enough.

Take the script language, for instance. Writing macros to automate log-ons and on-line sessions is fairly easy with *PC-Talk4* if you study the manual diligently. The language supports five basic “commands”—one to dial a number, one to insert a pause or wait for a given character, two others to load *PC-Talk4* commands, and another to send a string of text to the re-

mote computer. You specify the phone number, plug in your log-on passwords, string them together, and go.

Unfortunately, running the macros was hardly a salutary experience. Communications sputtered. Lines spit across the screen one minute, then froze or became garbled the next. Frequently the macro “hung up,” in the manual’s words—raising the need to rouse the routine with a command.

Macros cannot exceed 124 characters—just long enough for a script that logs on to a bulletin board laden with prompts, but no longer. While a Headlands Communications spokesperson suggested that that was automation enough, I’d like a more extensive script capability.

Executive Summary

PC-Talk4

Communications software

PC-Talk4 tries to bring an old standby of shareware software into commercial reality. Although the addition of a macro language and support for directories are pluses, the implementation of many features is either poor or puzzling.

Ease of setup	<i>Fair</i>
Ease of use	<i>Good</i>
Session automation	<i>Poor</i>
Terminal support	<i>Fair</i>
Protocol support	<i>Fair</i>
Error handling	<i>Fair</i>
Overall value	<i>Fair</i>

In addition, instructions to wait for a particular response let you respond with only a single character, like a colon. That's an annoying limitation when writing log-on scripts, particularly because many system prompts display multiple characters.

The DOS shell is just as incomplete. The shell is designed to enable you to run other applications, such as 1-2-3, while in *PC-Talk4*. Nonetheless, attempts to run a 128K graphics demo on a 640K machine provoked an "insufficient memory" warning, even though plenty of free RAM remained.

After repeated attempts to run a CAD program (and after receiving a bevy of error messages), I exited *PC-Talk4*, only to be greeted with an 'invalid COMMAND.COM' advisory. That message also appeared after I tried unsuccessfully to run several other programs. In time, all of these programs, and others, did run. Be careful that the application disk doesn't contain a version of COMMAND.COM different from the one used to start your system. Technical support at Headlands convinced me that life is easier with a hard disk than with a dual-floppy system.

When writing file-transfer macros, placing the file name and transfer specifications into an <Alt>-1 macro elicited error messages; the same macros ran properly when the specifications were stored in <Alt>-2, -3, -4, or -5. When I was on line, inscrutable arrows occasionally littered the command line once <Esc> had been pressed. At other times, tri-

angular brackets graced the command line while macros were executing.

PC-Talk4's error handling also needs work. When I tried to view a directory on a drive that was empty, the PC crashed. When I attempted to run a log-on macro that did not exist, the machine once again froze. *PC-Talk4* has retained its fondness for trying to write to drive B:, even when properly installed on a hard disk system.

Although a number of program enhancements are poorly implemented, *PC-Talk* remains a simple, straightforward communications package. In the rough-and-tumble corporate world, however, the race often goes to the slick. Once among the finest freeware offerings, as a commercial venture *PC-Talk* still has miles to travel. ●

Judy Getts is a freelance writer in Wauwatosa, Wisconsin, who specializes in telecommunications topics.

PC-Talk4
Headlands Communications
Corp.
P.O. Box 8
Tiburon, CA 94920
415/435-0770
List price: \$129
Requirements: 192K, DOS 2.00
or later version

Transcendental Mediation

Now that desktops

are hosting

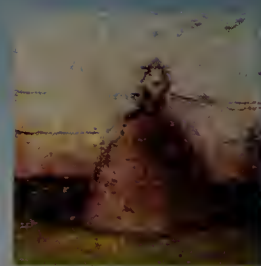
PCs and Macs alike,

Centram Systems West

thinks the

alliance is TOPs.

JIM HEID



A few years ago, the thought of Macintoshes and PCs coexisting in offices across the land was as implausible as the notion of Steve Jobs and John Akers bowling together. But then, times change.

Jobs is off working on his NeXT \$250 million, Apple has recognized the need for peaceful coexistence, and the Mac's easy operating style, burgeoning software library, and familial relationship with laser printers are gaining it entrée into offices once bathed in blue.

As PCs increasingly share departmental computing chores with Macs, there's a growing need to exchange files between them—to jazz up PC documents with Mac desktop publishing prowess, for example, or just to swap spreadsheet or data management files.

One solution is Centram Systems West's TOPS, a local area network that uses Apple's AppleTalk cabling and connectors to put a few PCs and Macs on speaking terms. AppleTalk, a twisted-pair bus network, is a logical transport medium. Apple shipped more than 200,000 of the connector kits last year alone (although most of them simply link Macs with LaserWriters), and AppleTalk capability is built into every Mac.

TOPS stands for—hold on to your granola bars—Transcendental Operating System. It's a network file server that makes a computer's disk drives (floppies or hard disks) available to other members of the network.

In TOPS parlance, you “publish” a disk or any number of subdirectories, making those resources available through the network. Other network users

then “mount” (access) these remote published volumes as if they were local. TOPS does the dirty work of translating operating system calls, enabling you to access a PC disk with a Mac, and vice versa.

TOPS for the PC consists of file-server software and an expansion board that adds an AppleTalk link to a PC, an AT, or a compatible. Several jumpers on the board let you change interrupts and port addresses assigned to other boards or tame clones that wander off the compatibility trail.

You're on your own finding the settings, however. TOPS's otherwise complete documentation doesn't list any known compatibility problems, and calling Centram proved no help. I whiled away 2 hours juggling jumpers before concluding that the TOPS board wouldn't work on a Tandy 1000. I was luckier with Hewlett-Packard's AT-compatible Vectra; after I moved one jumper, TOPS worked without a hitch.

Taking TOPS for a Spin

TOPS is a distributed file server. Instead of the network being chained to a single hard disk server, with TOPS, every computer on the network can be a file server. Passwords provide an optional safeguard.

To install TOPS software on a PC, you run a setup program that copies files to a TOPS subdirectory on a hard or floppy disk. The program also adds an AppleTalk device driver, ATALK.SYS, to your disk and modifies the CONFIG.SYS file to reflect the new

driver. On the Mac, an installation program adds the TOPS software to a disk's System file.

On the PC you can use a menu-driven utility to publish, mount, and unmount volumes, or you can enter TOPS commands directly from the DOS prompt. When mounting a volume, you assign it a drive letter or let TOPS give it the next available letter. Then you use the usual DOS commands to work with files. TOPS even depicts the Mac's *folders* (its unit of file organization) as DOS subdirectories.

On a Mac you use a desk accessory (a small background program that is always available) to publish local disks and to mount remote ones. Once you mount a PC disk, you use the Finder (the Mac's disk- and file-management program) to view directories and copy or delete files.

TOPS's ability to work with other computers' disks as if they were yours makes it a file transfer panacea. You can copy files between machines without tackling telecommunications, and you can save and load files to and from remote disks from within any program.

Of course, before you can actually work with a transported file, it must be translated into a compatible format. TOPS has a bare-bones facility that strips out formatting characters and copies straight ASCII text between the two systems. In addition, several Mac utilities convert files between Macintosh and DOS formats.

Fortunately, many Mac programs now read and write files in formats native to their PC cousins. A TOPS-equipped Mac user running *Microsoft Word 3.0*, for example, could open an MS-DOS

Word document from a PC disk, modify it, and then save it (either locally or to the PC disk) in any number of formats, including Mac Word, MacWrite, plain ASCII, DOS Word, and Microsoft's Rich-Text Format (RTF)—a Windows protocol. dBASE Mac users can manage .DBF files on a PC's hard disk. Excel and Jazz can ask "what if" questions of 1-2-3 worksheets.

Because TOPS turns a computer into a file server, the program can endow any networked machine with the cavernous capacity of the server's hard disk. Theory is better than practice, however, since AppleTalk is a relatively slow network, with transfer speeds of 230 kilobits per second—and it's a veritable snail compared to Ethernet's 10 megabits per second.

In addition, accessing program files from a server is a clunky procedure. Loading a program from a remote hard disk is only slightly faster than loading it from a local floppy, and only half as fast as loading it from a local hard disk. The bottleneck constricts dramatically when multiple users simultaneously vie for access to one hard disk.

Adding a PostScript

A PC without AppleTalk can use a printer that supports the PostScript page-description language. But once TOPS places the PC on AppleTalk, other network computers can share the printer.

Although increasing numbers of PC applications are climbing

aboard the PostScript bandwagon, many popular programs haven't joined in. If your favorite is among the holdouts, you have two options. First you can configure your software for a Diablo 630 letter quality printer (which PostScript printers can emulate), "print" documents to disk, and send the resulting files to a printer using a TOPS print spooler that works much like DOS's PRINT utility.

The alternative is to use Centram's TOPS Print utility, which enables you to grab the printer's fonts by embedding codes in your documents. The code '\ \h 12 i \ \', for example, summons Helvetica 12-point italic. With

TOPS Print, even WordStar can enter the world of desktop typesetting. (Well, almost—you can't obtain right-justified text, because programs that don't support PostScript can't calculate character values for PostScript fonts.)

TOPS Print does have one shortcoming—its "italic" isn't a true italic, but rather a slanted version of the font's Roman style. Moreover, you're restricted to the three font families—Helvetica, Times Roman, and Courier—built into the LaserWriter and most other PostScript printers. TOPS Print doesn't support the additional typefaces contained in Apple's LaserWriter Plus or QMS's PS-800 Plus.

The road to PostScript is smoother when you use programs that support the language, like Microsoft Word, although a few speed bumps may slow you down even then. Because PC programs expect to talk PostScript over a serial cable and not via AppleTalk's twisted-pair wire, you may have to edit the PostScript driver to send the code through TOPS Print. (The utility provides adequate instructions.)

But Microsoft Windows users temporarily face a dead end; the version of TOPS Print I tested balked at Microsoft's operating environment. Centram has promised Windows support in the next release, which is scheduled for this summer.

Executive Summary

TOPS

Local area network

Based on Apple's AppleTalk network, TOPS lets PC users exchange files with Macintosh users and access PostScript-equipped laser printers. Despite lingering problems with PC software and hardware compatibility, TOPS is an inexpensive way for PCs and Macs to work in harmony.

Ease of installation	Good
File translation services	Fair
Ease of expansion	Excellent
Security	Good
Speed	Fair
Printer support	Excellent
Overall value	Good

A Little Knowledge ...

Should You Get on TOPS?

TOPS not only juggles PC and Macintosh files, it also supports UNIX-based machines via AppleTalk, according to Centram.

But hampered by AppleTalk's mediocre throughput, TOPS isn't about to replace high-performance, Ethernet-class networks as the spinal cord for a building crammed with computers.

TOPS is ideal for the small office or department that frequently needs to swap files between PCs and Macs or wants better access to a PostScript printer from a PC. And if you recognize and can live with its limitations, TOPS is a fine way to bridge the cultural-exchange gap. ●

Jim Heid is a freelance writer, a Contributing Editor for Macworld and Publish!, and the author of dBASE Mac in Business (Ashton-Tate, Torrance, California, 1987).

TOPS version 1.02

Centram Systems West

2560 Ninth St.

Berkeley, CA 94710

415/549-5900

List price: \$349 per PC station (includes AppleTalk expansion board), \$149 per Macintosh station; TOPS Print \$189

Requirements: 512K; DOS 2.10 or later version for PCs, XTs, and compatibles; DOS 3.00 or later version for ATs and compatibles; AppleTalk cabling

*Applied Knowledge
Groups' Knowledge
Network,
a likable low-end LAN,
offers a quick route
away from
"sneaker net" setups.*

JOHN EDWARDS



As the local area network lobby relentlessly reminds us, LANs can be a panacea for those who want to swap files or share expensive printers, big hard disks, modems, or other productivity promoters. But LANs typically require costly full-time file servers, communications boards, special cabling, and other exotic gear. What do you do if your budget simply won't stretch that far?

You consider a software, or serial, LAN, which pares costs by slipping network functions into a RAM-resident program and relying on inexpensive telephone-type wiring to tether PCs (see "Port-to-Port LANs," PCW, June 1986). These nets work best with just a few users (who are willing to live with relatively modest performance). However, they can cure the "sneaker net" syndrome, which sends users trotting from one machine to another with floppy disks in hand.

One such software LAN is Applied Knowledge Groups' Knowledge Network, which connects up to six PCs or compatibles via their RS-232C ports. Priced at \$149.50 per PC, version 8.03 not only allows users to share peripherals, it offers a 115.2-kilobit per second data transfer rate, buffered print spooling, and an automatic error-correction system.

Setting up the hardware end of the Knowledge Network needn't be much more difficult than installing a few office telephones.

PCs must first be linked with standard twisted-pair cable. The layout is free-form; no need to bother about bus, star, or ring topologies, as you might with a traditional network. If you have wall-mounted telephone jacks that aren't connected to the phone system, they can extend the network's range over several offices. You can also run cables along the office baseboard. And PCs don't have to be huddled together, given the LAN's 1200-foot wingspan.

Specialized hardware requirements have been kept to an absolute minimum. The Knowledge

Network demands only the Network Node, an RS-232C-to-RJ11 modular phone connector for each PC. At the other end of the line, a Y-type RJ11 connector then ties the node into the network.

With the hardware in place, you're ready to fire up the software. Each PC requires both a special CONFIG.SYS file and SETNET, the network's primary configuration program. Unfortunately, placing the Knowledge Network on a start-up disk can be a wild and woolly task. Although many veteran PC users regard CONFIG.SYS file preparation as routine, others will find the experience harrowing. Keep the DOS

manual handy; it will enable you to muddle through creation of the file, which sets many of the network's parameters, including data transmission speed and serial port selection. Applied Knowledge Groups would be wise to provide a short program that builds the CONFIG.SYS file through a series of idiot-proof prompts.

Installing SETNET, by contrast, is foolproof and fast. SETNET features two menus: a configuration screen, which governs network access to a single PC's drives and printers, and an assignment screen, which displays the devices currently on the network, allocates hard disk space (as virtual drives), and assigns printers.

Assigning a virtual disk drive is simply a matter of entering a virtual drive letter on a menu line next to a remote site's actual drive. Printers are selected in a similarly straightforward manner, and on-line help is available for most menu options.

Once you've made your selections, SETNET alerts the network that you're ready for action and stores the setup data in a file called SETNET.DAT. You can direct the PC to automatically load this via a two-word batch file.

Manual Transmission

As a terminate-and-stay-resident application, the Knowledge Network lives in the background. It honors standard DOS commands, so you don't need to master a new command lexicon. At 41 pages, network documentation is on the skimpy side, but it's well written and generally clear.

```

Knowledge Network Configuration Screen

Local site name:      John's PC-XT

Local printer name:  Brother HR-15

Are other systems allowed to use your local printer? (Y/N): Y

Local Drive Accessibility:

A:   B:
L    ☒

R = Drive can be remotely accessed, L = Local use only

F1 - General Help
F3 - Help on the current field
F5 - Go to Drive Assignment Screen
F7 - Exit without saving
F9 - Accept changes

(C)Copyright 1986, 1987 by Applied Knowledge Groups, Inc.   Version 9.03 PCXT
Sunnyvale, California 94086, U.S.A.

```

SETNET, the Knowledge Network's main configuration utility, identifies network nodes and lets you assign virtual drives and printers.

Compared with high-end LANs, the Knowledge Network is relatively unsophisticated. In this case, fortunately, the absence of complexity results in operating simplicity.

In what remains the program's only major inconvenience, you must open and close (that is, assign and release) drives when writing to a file. This irksome restriction prevents simultaneous usage of the same drive, even among users seeking to access different files on that drive. Programs

that automatically create backups demand that drives remain unlocked while the application is in use—an obvious limitation that means only one user can access a drive for extended periods. Unfortunately, that reality, combined with the cryptic commands required to open and close a file, can breed nostalgia for sneaker nets.

In *PC World* tests, the Knowledge Network ran *WordStar*, *Microsoft Word*, *dBASE III*, and *Crosstalk XVI* without a hitch, and didn't grumble at the diverse needs of the range of applications. Applied Knowledge Groups reports that the Knowledge Network balks only at a limited number of copy-protected packages, most interpreted BASIC programs, and any program that initializes the network's serial port.

For most tasks, the network's speed is acceptable. Network control commands are transmitted at 9600 bps, and data moves at 115 kilobits. If your PCs run at varying clock speeds, you'll need to fiddle with the control command baud rate to optimize system performance. Fortunately, reducing control command speed doesn't affect the data transmission rate. A network with three active nodes exhibited no perceptible delay in sending or receiving data, although you wouldn't want every user to be continually accessing the same hard disk.

The Knowledge Network relies on the same error-detection scheme used in Ethernet LANs. The system seems to be free of bugs, glitches, and random meltdowns.

The product reflects many of the strengths and liabilities of its serial network brethren. Commending it are its low price, straightforward hardware installation, general ease of use, and virtually maintenance-free operation. On the minus side are its modest throughput, potentially thorny software configuration, inability to link more than handful of PCs, and limited value in disk-intensive file-sharing situations.

Nonetheless, for my money, the Knowledge Network is a solid performer, fully capable of yielding net benefits to the growing number of office workers who need to make the most of scarce hardware resources. ●

New York freelance writer John Edwards is a frequent contributor to various computer publications.

*The Knowledge Network
version 8.03
Applied Knowledge Groups, Inc.
1095 E. Duane Ave. #203
Sunnyvale, CA 94086
408/739-0300
List price: for two PCs \$299,
each additional PC \$149
Requirements: 128K, one disk
drive (two recommended), serial
port, DOS 2.10 or later version
Not copy protected*

Executive Summary

The Knowledge Network

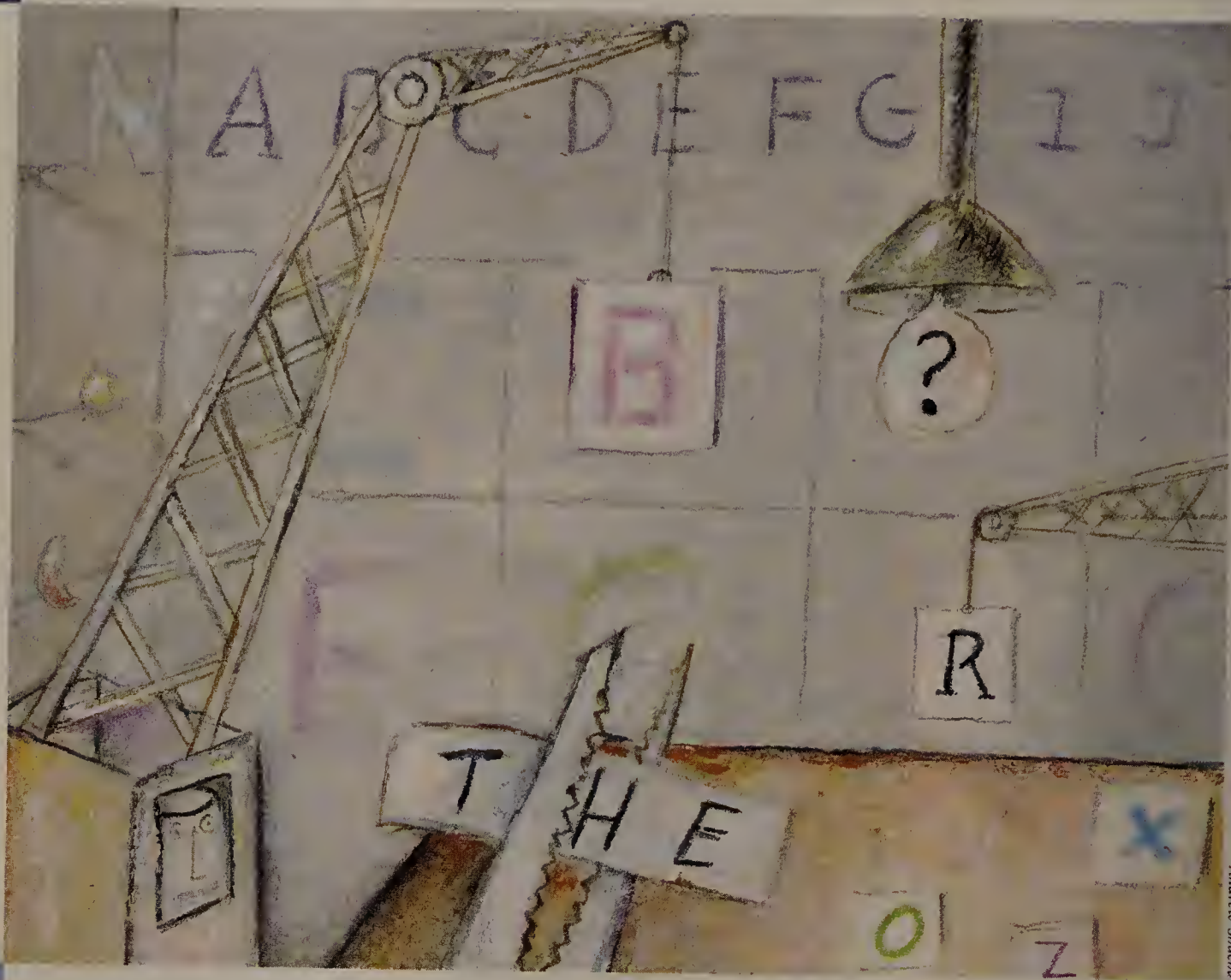
Local area network

A software-based local area network, the Knowledge Network offers a simple route to file and peripheral sharing. The transmission speed is high for a serial LAN, but throughput is inadequate for applications with heavy data-sharing needs. Its clumsy drive-locking procedure notwithstanding, the Knowledge Network provides a cost-effective way to link PCs productively.

Ease of Installation	<i>Fair</i>
Ease of use	<i>Excellent</i>
Software compatibility	<i>Good</i>
Speed	<i>Fair</i>
Printer support	<i>Excellent</i>
Overall value	<i>Good</i>

W O R D

P R O C E S S I N G



WORDPERFECT 4.2

MICROSOFT WORD 3.1

XYWRITE III

DISPLAYWRITE 4

July 1987

Almost Perfect

*WordPerfect 4.1
was a capable performer,
but there's always
room for improvement.
Version 4.2
adds a few refinements
and features
that make
this program a tough
act to follow.*

JORDAN J. BRESLOW



Few things are perfect, but *WordPerfect* is trying hard. *WordPerfect* 4.1 has proven that it can handle daily word processing chores as well as meet the most sophisticated demands. The upgrade from 4.1 to 4.2 polishes the diamond and adds new features without slowing the program's nimble pace.

WordPerfect 4.1's menu-driven editing treasure chest includes extras such as paragraph and outline numbering, sophisticated macro capabilities, multiple-document searching, and split screens, to name just a few. Version 4.2 bolsters *WordPerfect*'s file managing and indexing powers and—best of all—provides valuable file status information.

Well known for its uncluttered screen, *WordPerfect* has finally embellished its Spartan display. In addition to the familiar cursor position information, the full document file and path names now appear at the bottom of the screen. The program now also differentiates soft page breaks from hard, and you can select any ASCII character to indicate hard carriage returns.

Another *WordPerfect* strong point is its ability to display boldface, underlining, and italics on screen. Going a step further, a new preview function reveals headers, footers, footnotes, endnotes, margins, page numbers, and right justification.

For those who wanted an even more detailed look at page formats, *WordPerfect* could always display formatting codes (for example [IIRt], which indicates a hard carriage return). In earlier versions, those combinations of

Executive Summary

WordPerfect 4.2

Word processing software

WordPerfect 4.2 fortifies an already powerful word processing program. Fine-tuning includes adding path and file names to the status line, an improved document format preview, and reinforced search and replace capabilities. New features include document summaries and comments, automatic hyphenation, upgraded indexing, and support for the Apple LaserWriter.

Block mark, move, and delete	<i>Good</i>
Search and replace	<i>Excellent</i>
Spelling checker	<i>Excellent</i>
Printer control	<i>Good</i>
File management	<i>Excellent</i>
Overall value	<i>Excellent</i>

symbols and letters were often difficult to distinguish from surrounding text. *WordPerfect 4.2* displays format codes in boldface to clearly set them off.

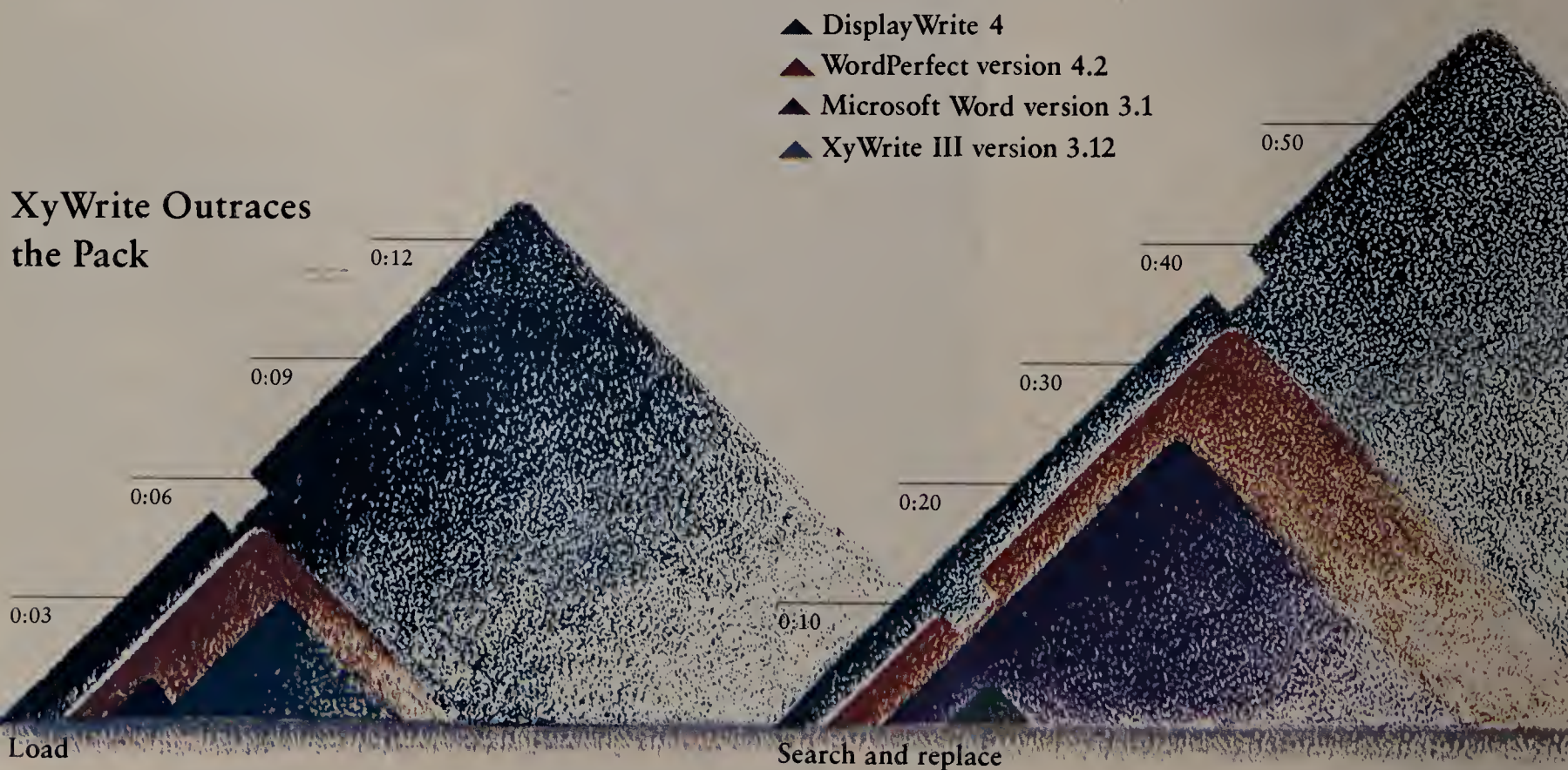
In an era of disk sharing and local area networks, the screen can also be a canvas for communicating with co-workers about a group-authored document. *WordPerfect 4.2* facilitates the team approach to word processing with two new features—one for document summaries and another for comments. These on-screen messages are contained in windows and do not appear in the printed document. The summary appears at the beginning of a document and contains the path and file names, the date of creation, the names of the author and the editor, and room for a note of up to 880 characters. The summary appears whenever you open a file or use *WordPerfect's* Look option to display a file's contents. Comments—remarks of up to 1024

characters—can be interspersed throughout a document. You can create, edit, or suppress summaries and comments at any time from within a file.

WordPerfect 4.2 has essentially the same editing functions as the previous version, with the exception of one notable new feature. The hyphenation function in version 4.1 interrupted typing, displayed a hyphen position, and prompted you for confirmation—an annoying distraction. An automatic hyphenation option in 4.2 does away with that process, but it has a serious flaw. When hyphenating, the program does not distinguish between words containing double consonants followed by *ing* where the root word contains the double consonant (such as *spelling*) and words whose final consonant is doubled to form the par-

- ▲ DisplayWrite 4
- ▲ WordPerfect version 4.2
- ▲ Microsoft Word version 3.1
- ▲ XyWrite III version 3.12

XyWrite Outpaces the Pack



ticipate (such as *setting*). The program always opts to hyphenate after the consonants.

Until now, *WordPerfect*'s otherwise well-designed search and replace function could not automatically replace a word with the same word if the replacement was bold-faced or underlined. *WordPerfect* 4.2 eliminates that shortcoming and also extends its searches to headers, footers, footnotes, and endnotes.

Like its forerunner, *WordPerfect* 4.2 can automatically generate a table of contents, up to five lists (such as a list of illustrations), and

an index. In *WordPerfect* 4.1 creating an index was tedious; you had to mark each occurrence of every word or phrase to be indexed.

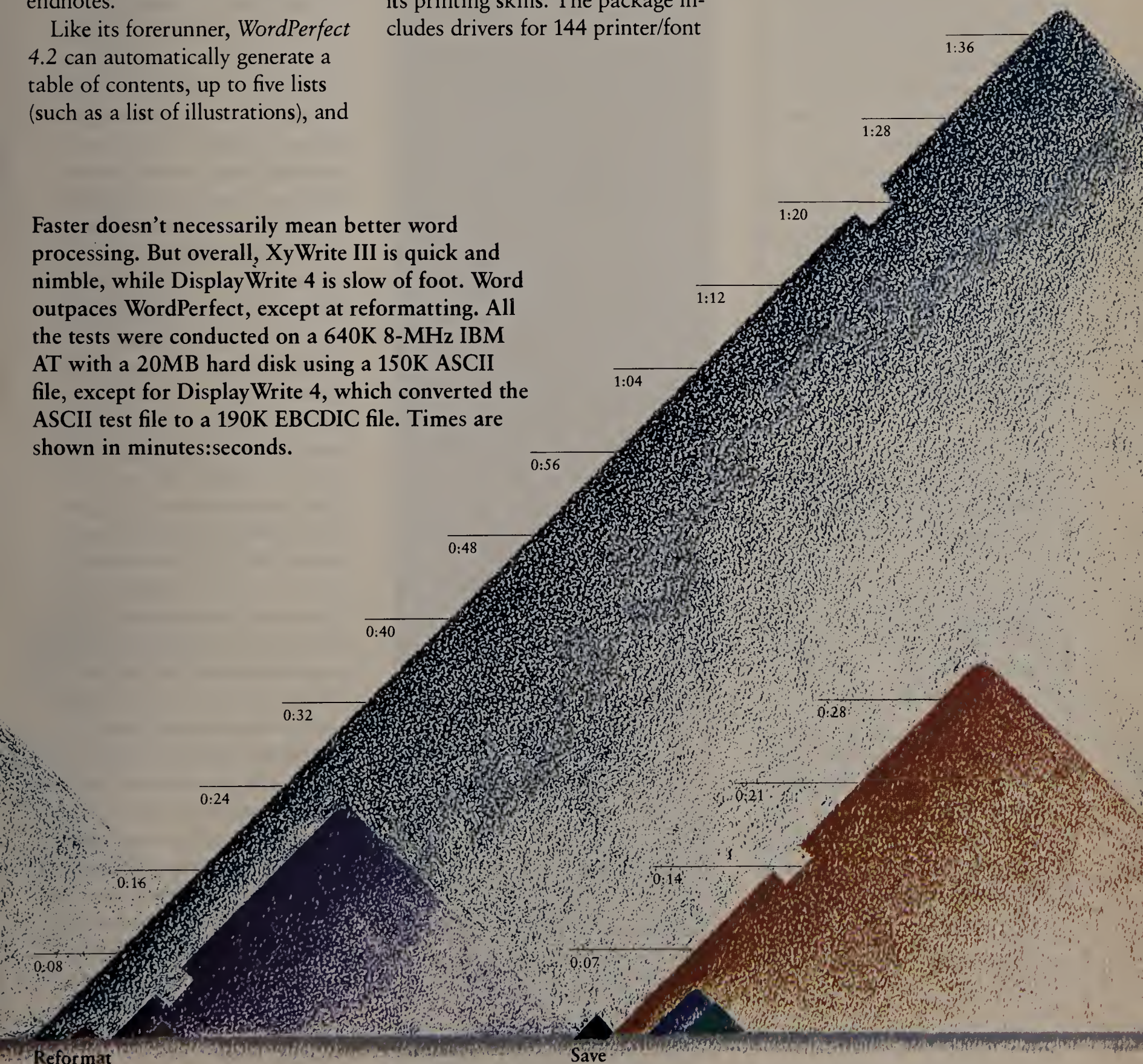
WordPerfect 4.2 streamlines indexing with *concordance files*: *WordPerfect* files in which you list each term you want indexed. When the program generates an index, it scans the main document for those words and phrases.

WordPerfect 4.2 has also honed its printing skills. The package includes drivers for 144 printer/font

combinations, including 39 for the HP LaserJet family. New in version 4.2 is support for the Apple LaserWriter. In addition, you can now print selected pages from a document, a feature strangely lacking from previous versions.

Other improvements include the addition of antonyms to the thesaurus. The program also has a new on-line tutorial similar to

Faster doesn't necessarily mean better word processing. But overall, XyWrite III is quick and nimble, while DisplayWrite 4 is slow of foot. Word outpaces WordPerfect, except at reformatting. All the tests were conducted on a 640K 8-MHz IBM AT with a 20MB hard disk using a 150K ASCII file, except for DisplayWrite 4, which converted the ASCII test file to a 190K EBCDIC file. Times are shown in minutes:seconds.



Microsoft Word's. Of special interest to attorneys, WordPerfect 4.2 can also generate a table of authorities—lists of court decisions, legislation, and other references cited in a brief.

WordPerfect 4.2 will read version 4.1 files. Although the reverse is not true, 4.2 does contain a utility to convert its files to the old-style format. Most macros from version 4.1 will also continue to work with 4.2, although a few new commands in some menus may require macro revision. Version 4.1 users with customized spelling checker or printer files can continue to use them.

WordPerfect 4.1 owners shouldn't hesitate to pay \$35 for the upgrade. Usually an avalanche of new features in a program means new complications. WordPerfect 4.2's new format display, document summaries and comments, and expanded indexing are icing on the cake. ●

Jordan J. Breslow is an attorney practicing computer law in Walnut Creek, California.

WordPerfect 4.2
WordPerfect Corp.
288 W. Center St.
Orem, UT 84057
801/225-5000

List price: \$495, upgrade \$35
Requirements: 256K, two disk drives (hard disk recommended), DOS 2.00 or later version

Not copy protected

The Latest Word

Microsoft Word 3.0

secured a foothold

on word processing's

summit.

Version 3.1

should be able

to set up camp there.

ERIC ALDERMAN



Microsoft Word is a leading contender for word processing's crown. Locked in battle with WordPerfect Corporation's WordPerfect, Word is constantly improving to keep up with the competition. But although Word may try to match WordPerfect feature for feature, the program isn't likely to change fundamentally. The upgrade from 3.0 to 3.1 is a case in point.

Even before it evolved into its present feature-laden form, Word was, in many ways, ahead of its time. Its style sheets provided an unusual degree of formatting control, and its outstanding laser printer support became almost legendary. Version 3.0 added an outlining function, which extended Word's ability to restructure cumbersome documents. That version also increased the program's speed and removed copy protection. The latest release, version 3.1, adds a fast, thorough thesaurus and supports even more laser printers and graphic displays.

Word 3.0 users will notice few differences in version 3.1. The most visible new feature is an impressive 220,000-word thesaurus—actually Microlytics' Word Finder, originally a RAM-resident program that's now seamlessly incorporated into Word 3.1.

To use the thesaurus, you position the cursor on any word in a document and press <Ctrl>-<F6>. Almost instantly, Word displays a window containing an impressive array of synonyms organized by meaning and part of speech. The same selection procedure will give you synonyms for those synonyms. When you've found the word you want, press <Enter> to insert it in the text.

Another 3.1 enhancement is full support for IBM's Enhanced Graphics Adapter (EGA) and its compatibles. One of *Word*'s most interesting features is its graphics mode, which displays on screen such print attributes as double underlining, italics, small capitals, superscripts, and subscripts. Until this upgrade, however, even with the EGA the text was displayed in the IBM Color/Graphics Adapter's 200-line resolution, and screen updating was slow. For those reasons, most people preferred to use *Word* in its speedier character mode, even though it used highlighting instead of displaying fancy on-screen detail. With *Word 3.1*, not only is scrolling in graphics mode nearly twice as fast, but print enhancements get the full benefit of the EGA's 350-line resolution. Adventurous folk can even opt for the EGA's special text mode, which displays 43 lines and 90 columns of text.

When used with the Hercules Graphics Card Plus, the program takes advantage of the board's RamFont mode to display print enhancements via a special extended character set. This combination delivers the best of both worlds: the speed of character mode plus the ability to preview print enhancements in graphics mode. *Word 3.1* also fully supports the 400-scan-line displays of the AT&T 6300, the HP Vectra, the Toshiba 3100, and the Compaq Portable III.

Version 3.1 increases *Word*'s hard copy capabilities by supporting ten new printers and enhancing existing printer drivers. Included in the new printer lineup are the LaserWriter Plus, the AST TurboLaser, the QMS KISS, and the Quadram Quadjet. *Word 3.1*'s LaserJet driver supports several

new font cartridges—including the Hewlett-Packard/Microsoft Z cartridge, which contains Helvetica and Times Roman fonts in sizes ranging from 8 to 14 points.

Registered *Word 3.0* users can make the transition to 3.1 for \$25. For pre-3.0 versions, the conversion costs \$100, which covers a new manual. If you use any of the newly supported hardware or think you'll benefit from a good on-line thesaurus, the update is certainly a smart investment.

The 3.1 upgrade maintains the standoff between *Word* and *WordPerfect*; which program you prefer is largely a matter of working style. In *Word*, the main menu at the bottom of the screen serves as a gateway to submenus for all functions. *WordPerfect* displays a single status line and uses the entire screen for text, while function keys access all features. *WordPerfect* extras include a drawing option, which produces simple line graphics, and columnar math functions. *Word* counters with an outlining function and a glossary that can automatically insert frequently used text into a document. A clear plus for *WordPerfect* is its macro facility, which stores regularly used key combinations for easy access. But for those who love mice, the decision is easy: *Word* has full mouse support, while *WordPerfect* has none.

The biggest boost to *Word*'s fortunes, however, is its new thesaurus, a feature that's been a *WordPerfect* mainstay. In addition, the extra laser printer support beefs up one of *Word*'s enduring strong points. *Word* has always been a first-class word processing program—now, it's even better. ●

Executive Summary

Microsoft Word 3.1

Word processing software

Microsoft Word 3.1's new, 220,000-word thesaurus is a welcome and well-implemented addition to an already sound word processor. Enhanced EGA support enables users to take full advantage of the program's graphics mode. The upgrades aren't profuse, but they help *Word* keep its position as one of the top word processing programs around.

Block mark, move, and delete	<i>Excellent</i>
Search and replace	<i>Excellent</i>
Spelling checker	<i>Good</i>
Printer control	<i>Excellent</i>
File management	<i>Good</i>
Overall value	<i>Excellent</i>

Eric Alderman is coauthor of Advanced WordPerfect: Features and Techniques, published by Osborne/McGraw-Hill (Berkeley, California, 1986). He is also director of Whole Earth Access Computer Training in Berkeley, California.

Microsoft Word 3.1

Microsoft Corp.

16011 N.E. 36th Way #97017

Redmond, WA 98073-9717

206/882-8088

List price: \$450, upgrade from version 3.0 \$25, upgrade from versions prior to 3.0 \$100

Requirements: 256K, two disk drives, DOS 2.00 or later version

Not copy protected

Just Tough Enough

XyWrite III

*version 3.1 wields the
word processing power
of its predecessors
along with a few
new features
that make it easier
to use.*

JOHN SLADEK



XyWrite, which originally emulated a powerful newsroom word processor, has a reputation as a journalist's program—fast, but tough. People think XyWrite users are cynical chain-smokers who shout into telephones. XyWrite is a high-powered word processor geared for heavy-duty writing chores, and for some it's tough to learn.

XyWrite's hard-boiled image is due to its command-driven interface. Most of the program's operations are user-programmable, so you can define parameters as prosaic as a deleting or undeleting <Backspace> key and as complex as a 43-line EGA display. You can write custom printer drivers and keyboard macros, plus create new features of your own (such as a word counter) using XyWrite's built-in programming language. Be prepared though—taking advantage of all this flexibility is hard work.

XyWrite III, however, softens up with every new edition. Besides XyWrite's already rich set of features (see "XyWrite III: The Taming of the Shrewd," PCW, August 1986), version 3.1 includes new file management, cross-referencing, indexing, and printing functions.

Leading the list of new file management commands is one of the most useful features I've seen in a word processor—the long directory. It enables you to peek at the first few lines of a document without opening the file, a handy capability for those of us who tend to forget what our cryptic file names mean. XyWrite III also has new commands to help you winnow your way through hard disk sub-directories. The Find command will search through all sub-directories for a particular file (and show the path), while the Tree command displays a diagram of sub-

directories and permits access to any one of them with a single keystroke.

Previous releases of XyWrite III couldn't copy or rename a file unless you opened it first or used DOS commands. Version 3.1 fills that gap with its own Copy and Rename commands, which perform the same functions as their DOS counterparts. Additionally, with a new Append command you can combine two files without opening either one. These commands mean fewer exits to DOS and put XyWrite III file management on a par with WordPerfect's and ahead of Word's.

Version 3.1 also delivers a few refinements to help keep large documents organized. Earlier versions of XyWrite III featured a counting system that automatically numbered elements such as chapters, paragraphs, sections, or outline headings with Arabic numerals, Roman numerals, or letters. That scheme also renumbered the elements if their order changed. Version 3.1 goes a step further by letting you "number" blocks of text—whether pages or footnotes—with anything from Greek characters to text strings of your own design.

The program's numbering prowess also extends to cross-references. Anyone who has ever prepared or edited a long document knows how long it takes to check and change numbered references such as "See figure 17, chapter III, page 24." Version 3.1's reference commands automatically revise references to pages, chapters, footnotes, document sections, paragraphs, figures, or ta-

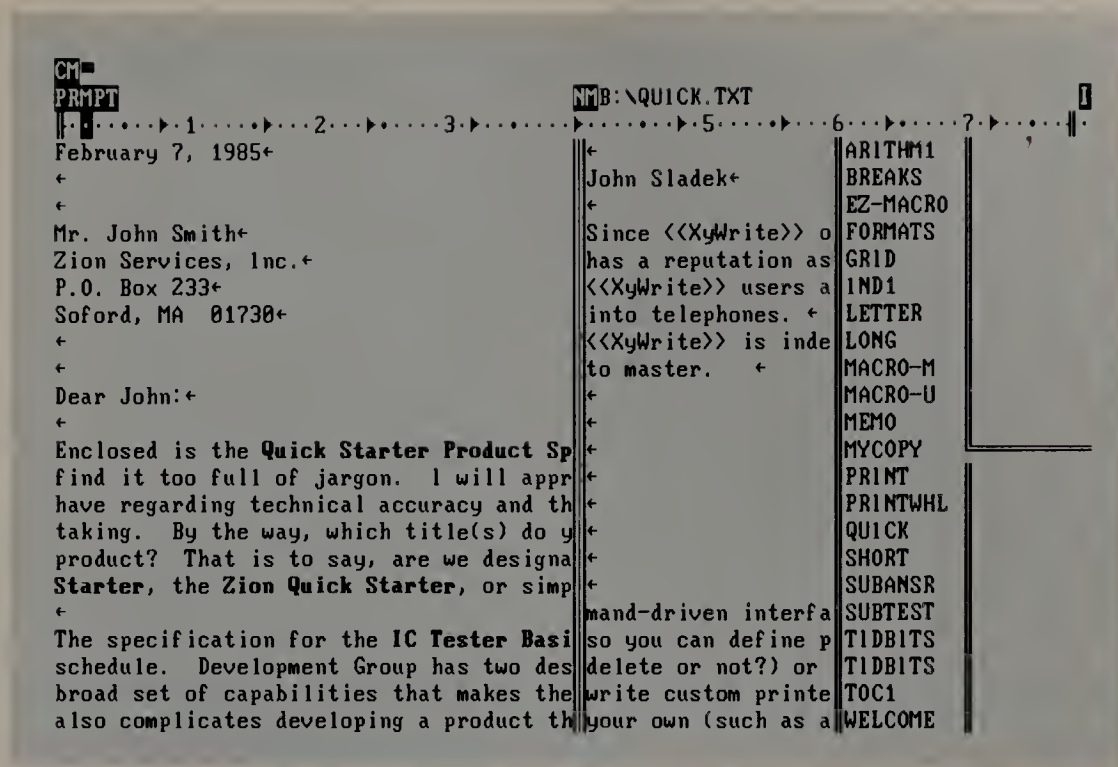
bles throughout the document whenever changes are made.

XyQuest has also embellished *XyWrite III*'s indexing functions. Like earlier releases, this edition of *XyWrite* can automatically construct an index or a table of contents from words or phrases marked in a document. With version 3.1 you can also create your own index-sorting system (you may, for instance, want to list *green thumb* before *greenhouse*).

Always a first-class printer manager, *XyWrite III* now supports 200 printers, including the LaserWriter and the LaserJet Plus. In addition, you can preview headers, footers, footnotes, page breaks, and page numbers—normally embedded invisibly in a *XyWrite III* document—on screen before printing the document. Version 3.1 also has new commands that adjust leading (the space between printed lines). This can improve page design, especially if you need to mix different point sizes and fonts on the same line. Moreover, XyQuest recently announced plans for new printer drivers for major commercial typesetters from Allied Linotype, MonoType, and Compu-graphic Corporation.

Despite its improvements, however, version 3.1 retains some of the annoyances present in previous releases. For instance, *XyWrite III* requires that you reconfigure the keyboard to use most RAM-resident software. Even then, the program doesn't work with all TSRs (memory-resident programs). Potential users should check to see that their favorites will function. Still absent are a spelling checker and a thesaurus.

Version 3.1's modest improvements—particularly the new file



XyWrite III's latest version opens as many as nine rectangular windows at a time in a variety of sizes.

management functions—make *XyWrite III* easier to work with. The sheer number of commands, however, requires a serious commitment to learning the program. Users who don't want to spend the time to master this complex program will no doubt be happier with an alternative. *XyWrite III* may be softening its hard-nosed image, but it's still best for those with tough word processing jobs. ●

John Sladek writes science fiction novels and technical manuals. His book Using XyWrite III is published by Osborne/McGraw-Hill (Berkeley, California, 1987).

XyWrite III version 3.1
XyQuest, Inc.

P.O. Box 372
Bedford, MA 01730
617/275-4439

List price: \$395, upgrade \$40
Requirements: 256K RAM, two disk drives (hard disk recommended), DOS 2.00 or later version

Executive Summary

XyWrite III

Word processor

XyWrite III version 3.1 continues to be a heavyweight among word processors due to its highly flexible, programmable design. New embellishments make it easier to use, but the complex command-driven interface still requires dedicated study.

Block mark, move, and delete	Good
Search and replace	Good
Spelling checker	None
Printer control	Excellent
File management	Excellent
Overall value	Good

DisplayWrite Keeps Trying

*DisplayWrite 4—
the newest member
of IBM's DisplayWrite
word processing family—
improves on
earlier releases,
but it still lacks
the punch to challenge
word processing's
top contenders.*

RUTH HALPERN

IBM, like a domineering patriarch, binds its word processing software to family tradition. *DisplayWrite 2* descended directly from the graceless DisplayWriter dedicated word processor; *DisplayWrite 3* took a few first steps along the workstation-to-PC evolutionary path. Now, with pulldown menus and a more logical command structure, *DisplayWrite 4* takes further strides toward ease of use, but it still hasn't outgrown the influence of its ungainly dedicated ancestor.

Like *DisplayWrite 3*, *DisplayWrite 4* sports standard business word processing features such as mail merge, a spelling checker, an outline generator, columnar math functions, and the ability to import files from other applications. The major changes lie in how you access these functions. The 13 main menu options, for instance, have been consolidated into 9. Other welcome modifications include mouse support, pulldown command menus, and context-sensitive help in pop-up windows.

DisplayWrite 4 makes adding, deleting, or rearranging text a little smoother than its predecessors did. In *DisplayWrite 3*, performing operations such as underlining, boldfacing, and block moves and deletes requires searching through several menus. *DisplayWrite 4* displays all its basic editing commands in the pulldown Block menu. Instead of flicking through menu lines, you can now choose editing functions by highlighting options with the cursor or

a mouse, entering a command number, or pressing a command key. In addition, the new version lets you use the cursor keys to move forward or backward one word at a time. And if you close a document and then reload it, a feature called Paper Clip automatically returns the cursor to its last location.

Two new features in *DisplayWrite 4* help handle documents that will be reviewed by several people before emerging in final form. The program's standard way of adding comments is called Revision Marking: You enter the revision mode, and the addenda appear on screen in inverse video. When you print the document, additions appear in boldface and deletions are struck through. *DisplayWrite 4* also offers a more exotic text-editing alternative: Voice Notes, the PC equivalent of a dictaphone. With IBM's PC Voice Communications Option (consisting of an add-on board, a speaker, and a microphone), *DisplayWrite 4* records comments and replays them when the document is reviewed.

Despite these embellishments, *DisplayWrite 4* is cumbersome and lacks features common in other word processors. Although the main menu commands have been consolidated, the command structure still seems heavy-handed compared to that of *WordPerfect* or *Microsoft Word*. Contrary to popular usage, for example, *DisplayWrite 4* still treats revising and creating a document as separate main menu operations.

DisplayWrite 4's file-handling features are neither as powerful



nor as graceful as those in *WordPerfect* or *Word*. You can view a document list directory from the main menu or from within a document, but the list isn't alphabetized or arranged chronologically. And while *WordPerfect* enables you to copy, rename, and delete files from within the directory, you can only open, edit, and close files from within *DisplayWrite 4*.

Also, the program doesn't display all text formatted as it will appear on the printed page. Format codes are the only on-screen indicators of justified text, header and footer location, and hard page breaks. During editing, you can choose to either display format codes or hide them until the cursor is right on top of them. You may want to opt for the latter, since the codes are composed of distracting lines and squiggles. Moreover, the program doesn't display double-spacing on screen.

DisplayWrite 4's limited page orientation—a holdover from its dedicated word processor origins—further hampers smooth editing. The program can't display the bottom of one page and the top of another at the same time, producing frustrating pauses on screen as you read from page to page. Even more annoying is *DisplayWrite 4*'s failure to reposition page breaks when you insert or delete text. Instead, you must use a separate pagination function to reformat the entire document once you've completed your edits. And

you can't advance the cursor by sentence or by paragraph.

Another major drawback is the program's limited printer support. Aside from a generic printer driver, *DisplayWrite 4* provides full support for only eight printers—all of them IBM's. A utility enables you to configure the program for other printers, but using it requires close study of *DisplayWrite*'s technical manual, and even then you must jury-rig support for such popular printers as the LaserJet.

Finally, although *DisplayWrite 4* offers context-sensitive help, the help screens don't explain precisely which keystrokes perform what function. Fortunately, the explanations in the new user's manual (which has been condensed from two volumes to one) provide the necessary information.

People who have already adopted the IBM Office Systems family will find *DisplayWrite 4*'s refurbished interface, enhanced editing capabilities, and new office aids welcome improvements over *DisplayWrite 2* or *3*. However, many other programs on the market offer comparable word processing power without *DisplayWrite 4*'s limitations. Look for a program with more flexibility, better on-screen editing, and support for at least one printer that's not an IBM family member. ●

Ruth Halpern is a freelance writer and a microcomputer training consultant who also teaches business writing in Oakland, California.

Executive Summary

DisplayWrite 4

Word processing software

DisplayWrite 4 features a new, streamlined interface and incorporates several editing refinements such as word-by-word cursor movement. Although it's an improvement over *DisplayWrite 2* and *3*, the program's page orientation still inhibits smooth editing. *DisplayWrite 4*'s IBM-only printer support doesn't compare well to rival word processors' support of hundreds of brands.

Block mark, move, and delete	Excellent
Search and replace	Fair
Spelling checker	Good
Printer control	Poor
File management	Fair
Overall value	Fair

DisplayWrite 4

IBM Corp.

P.O. Box 152560

Irving, TX 75015

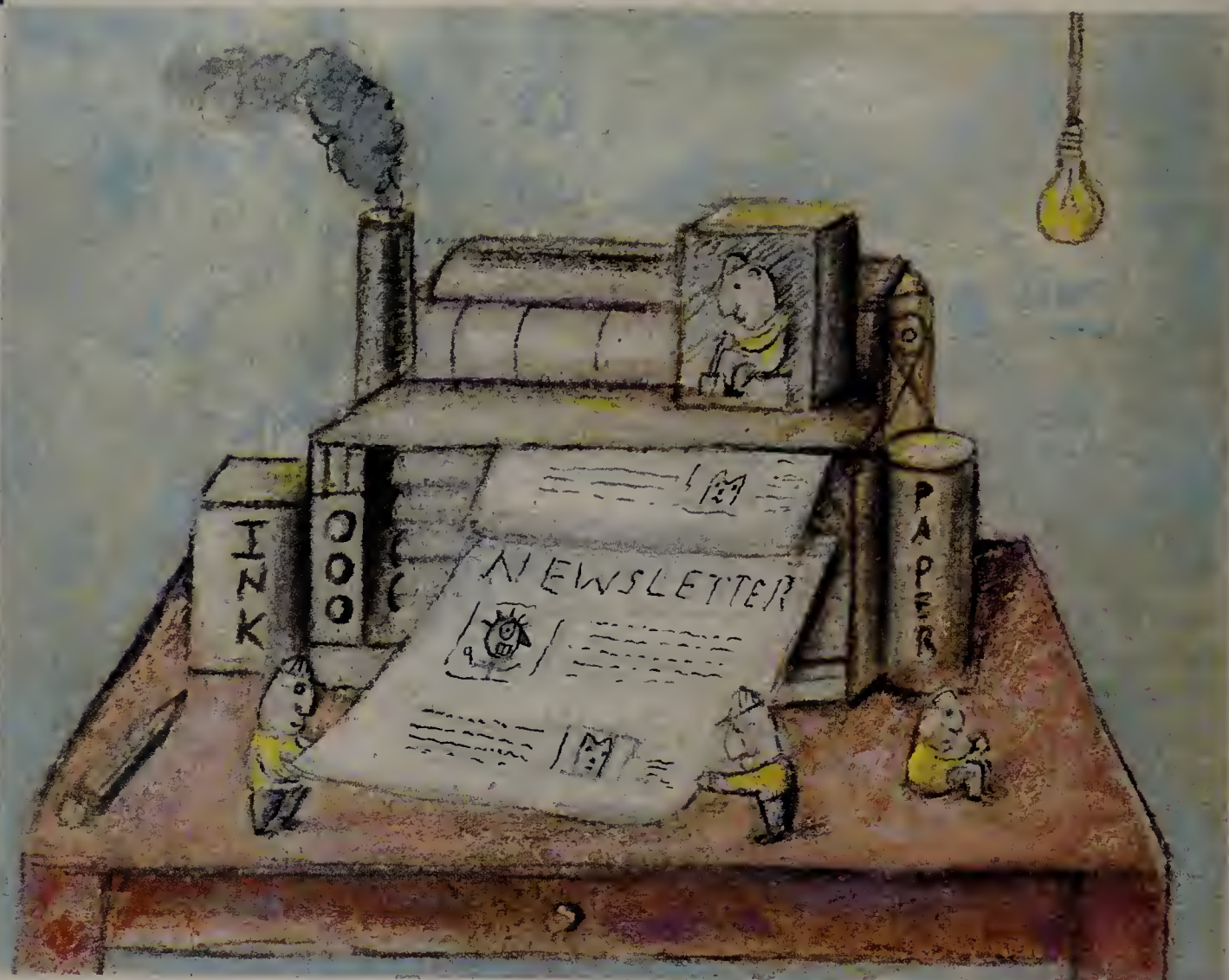
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may be in order.*

RICHARD JANTO



With the arrival of *Ventura Publisher* and *PageMaker*, Macintosh envy no longer afflicts ten out of ten desktop publishers using the PC. These powerful page composition programs have set the standard for graphics-oriented desktop publishing on all personal computers.

Once you use *Ventura Publisher* or *PageMaker*, it's hard to go back to code-oriented systems—or settle for wan imitators. Few programs can match this pair's ease in placing and manipulating text and graphics; fewer still embrace as diverse a range of word processor and graphics file formats.

Although each program hangs its hat on a different hook—*Ventura Publisher* on document-wide, *Word*-like style sheets, *PageMaker* on the designer's pasteup board—first-time users can pick up either tool and start laying out publications in short order. While neither program can vie with code-oriented typographic heavyweights like *MagnaType* or *DeskSet*, automatic kerning, dictionary-based hyphenation, and sharp laser printer and phototypesetter output are all part of the deal. Not bad for the first generation of PC-based desktop publishing programs.

Into this monsoon sails *Harvard Professional Publisher*, Software Publishing's big ticket, what-you-see publishing program that offers many of the same design and page control features as the Big Two. Unlike the competition, however, the program bears an impressive typographic pedigree: It's a junior version of Bestinfo's \$7000 *Superpage*, a commercial typesetting and pagination system used by magazines and newspapers.

But breeding isn't everything. Although *Professional Publisher* offers several watered-down *Superpage* features—including a “best-fit” dictionary and algorithmic hyphenation, automatic kerning and tracking, and the ability to automatically flow text around irregularly shaped objects—you'll find yourself reaching for a tranquilizer when you tangle with the program's circuitous approach to page composition.

Once you install *Professional Publisher*'s eight floppy disks on an XT or AT (a 10-minute operation that automatically sets up program, font, and printer-driver directories), you enter a menu-mad, *pfs*-inspired world. If you relish the point-and-click simplicity of *Ventura Publisher* and *PageMaker*, you'll balk when you discover that *Professional Publisher* can't be switched from one mode to another with the click of an icon. Instead, you must continually return to a main menu, plow through submenus, and fill out on-screen forms ad nauseam.

This inconvenience applies even when you generate something as simple as a box. To do so, you have to open a menu, select and specify line width and box tint, trigger the draw function with yet another menu option, and then set start and end points. If you miss the mark, you can't select the box and drag it into place—you must erase it and start over.

Other hurdles to interactive page layout await. At first glance, *Professional Publisher*'s electronic master page seems quite familiar. It comes complete with pulldown menus, horizontal and vertical rulers, and a page grid that shows margins and column guides. Setting such repeating elements in place, however, requires exiting to the main menu and noting in on-screen forms such parameters as footer lines, repeating graphic elements, and number of columns. The resulting format can be applied to different documents, yet you can't use more than two page styles within any single document. Worse still, once you save a master page layout, you can't change it. If you want to see a document in a two-column instead of three-column format, you can't click a menu option and watch the transformation unfold—you must roll up your sleeves and recreate the document from square one.

File compatibility is another sore spot. *Ventura Publisher* and *PageMaker* can import formatted documents created with a number of word processors. But *Professional Publisher* accepts only files in the DCA format and ASCII text—although it transfers margin settings, indents, character attributes, line spacing, and justification. As with *Ventura Publisher*, you can save time by inserting formatting codes in a source text file. For example, type <HEAD1> next to a document's title, and *Professional Publisher* sets the imported line with the headline type, point size, and leading assigned to the HEAD1 tag.

The graphics story is a bit brighter. *Professional Publisher* will snap up pictures produced by

most paint programs; images digitized with CompuScan, Datacopy, and Dest scanners; and charts generated by 1-2-3 and *Harvard Presentation Graphics*. Conspicuously absent, however, is support for *AutoCAD*, *Windows Draw*, *GEM Draw*, and other object-oriented line-art programs. This shortcoming alone will dissuade a rash of CAD/CAM, engineering, and scientific users from considering the program.

Executive Summary

Harvard Professional Publisher

Desktop publishing program

Harvard Professional Publisher aspires to play in the big leagues with *Ventura Publisher* and *PageMaker* but falls short. Although many of the same typographic and pagination functions are present, importing and interactively placing text and graphics on the page are complicated by the program's convoluted menu-driven system. Worse still, once a master page format is saved it can't be changed.

Text/graphics integration	Good
Pagination and layout controls	Good
Typographic features	Excellent
Text processing	Poor
Graphics generation	Poor
Overall value	Good

As you might expect, text and graphics immigration has all the charm of a carefree day at Ellis Island in the late 1890s. For example, to pour an ASCII text file onto the page, you select Import Files from the main menu. Unfortunately, *Professional Publisher* can't list available files—and if a file isn't in the current directory, the program can't find it, even if you specify the proper path. Assuming the file is in the current directory, you must flip through several more menus to create a *Professional Publisher* document, select document settings, create and display a page, and finally, define formats.

Professional Publisher then sizes up the eager immigrant for a few minutes (in this case, to flag all the hyphenation points) and waves it through the turnstiles. Point to where the text should begin and end, click, and the hyphenated copy rolls into selected columns on the current page or throughout the entire document.

Once text is in place, you can format it with *Ventura Publisher*-like tags that represent font, point size, leading, and placement information. To set a line of text as a headline, for example, you select Edit from the Text menu. An editing window appears, and you move the cursor to the beginning of the line and use the PC's function keys to select predefined tags. To actually view the set text, you must then close the editing view to display the page.

Reformatting a document is a matter of changing the attributes associated with the tags. But remember, this isn't *Ventura Publisher*. Instead of modifying a tag on the fly, you must exit the work area, select the Define Format menu, and change the tag attributes stored in four separate on-screen forms.

Incorporating graphics produced with other programs is much the same, but here's the kicker: You can't crop, much less distort, an imported image. If you shrink or expand a graphic, the original proportions persist. Aside from this notable limitation, *Professional Publisher* handles graphics competently. What's more, the program can automatically flow text around irregular shapes—something that *Ventura Publisher* and *PageMaker* can't begin to match.

Most desktop publishing programs would also be hard-pressed to equal *Professional Publisher*'s typographic talents. The program's automatic hyphenation and justification function combines a 20,000-word dictionary with a sophisticated algorithm taken from *Superpage*; the results are arguably superior to both *Ventura*'s and *PageMaker*'s. The resulting word spacing and letterspacing is tight, and the program almost never breaks a word incorrectly. *Professional Publisher* also includes a sharp automatic kerning feature (based on 56 letter pairs), plus automatic tracking and letterspacing. The only drawback: These functions lack manual controls—a decided disadvantage when you have to fiddle with large headline type.

But high-powered typographic features do not a desktop publishing program make. *Professional Publisher*'s reliance on menus and forms makes interactive page layout nearly impossible. The limited number of acceptable document formats similarly dampens the program's usefulness and appeal. Still, if Software Publishing carefully studies the competition, scraps *Professional Publisher*'s intrusive menu system, and beefs up internal graphics functions, who knows? This also-ran could be tomorrow's top contender. ●

Richard Jantz is a freelance writer in Berkeley, California, and the author of Ventura Publisher for the IBM PC: Mastering Desktop Publishing (John Wiley & Sons, New York, 1987).

*Harvard Professional Publisher Software Publishing Corp.
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* Safestrip (6 outlets)	21.
* Diamond (6 outlets)	29.
* Diamond-Plus (w/FAX & modem protection)	41.
* Emerald (6 outlets; 6 ft cord)	36.
* Ruby (6 outlets; EMI/RFI filtered; 6 ft cord)	55.
* Ruby-Plus (w/FAX & modem protection)	65.

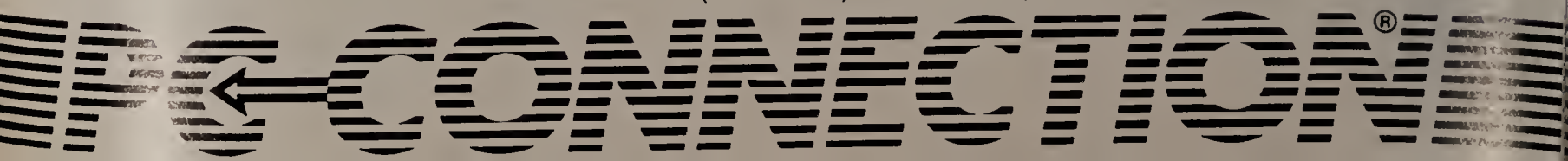
DCA ... 1 year

* Irma (3270 emulation board)	729.
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Epson ... 1 year

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--	------

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--	------

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D A T A M A N A G E M E N T



Andrew Shachar

PARADOX 1.1

PFS:PROFESSIONAL FILE

Q&A 2.0

ASKSAM 3.0

A Pretty Paradox

*A nimble contender
among relational
heavyweights,
Paradox now offers
a menu-driven
application generator
and handles forms
more efficiently.*

WILLIAM URSCHEL



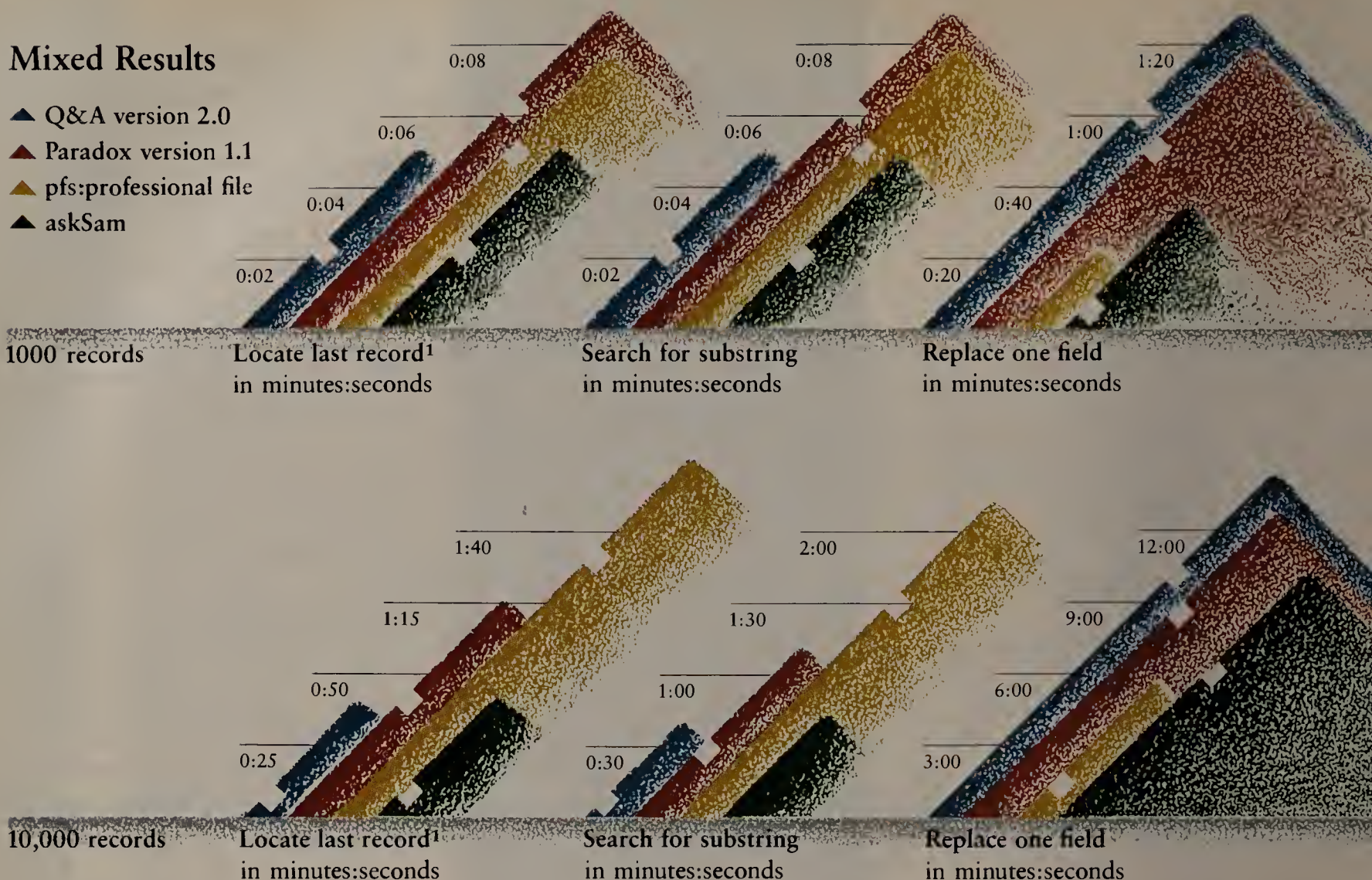
Recent confrontations in the data management arena have produced some interesting hybrid styles. Among "lightweight" single-file data managers, for instance, there's a broad-based move to incorporate more capability for handling text and documents. Nashoba Systems' *Nutshell* and DayFlo Systems' *Tracker* use a variety of strategies for manipulating text-intensive data, including indexing every word and providing forms with embedded fields. Seaside Software's *askSam*, though an early text-oriented system, still ranks among the most radical, achieving its word-handling flexibility by making data entry and search functions independent of field designations. Symantec's *Q&A* offers an unusually rich set of features for handling documents, as well as one of the most successful implementations of a natural language interface in a PC application to date.

Big changes are also afoot in the data base heavyweight division. First introduced in 1985, Ansa Software's *Paradox* was hailed for its speed, its power, and above all, the way its menus and graphics brought visual perspective to complex data relationships (see "A Most Ingenious Paradox," *PCW*, March 1986).

dBASE fans, however, have argued that *Paradox* lacks the muscle of the big boys—that it climbs into the ring without an application generator, and that it rigidly insists on a one-form, one-file relationship. A new release, *Paradox* version 1.1, meets these two important challenges.

Mixed Results

- ▲ Q&A version 2.0
- ▲ Paradox version 1.1
- ▲ pfs:professional file
- ▲ askSam



Like the earlier version, the current *Paradox* is an unusually intelligible program. The hierarchical, tree-structured menu gives you a clear map of the program and a solid framework with which to visualize details. Systems such as *dBASE III Plus* list their options but graft a menu onto what is essentially a command-driven structure. This mismatch shows—especially in comparison to *Paradox*'s smooth, consistent, 1-2-3-style interface.

Furthermore, Ansa integrates spreadsheetlike menus with a matrix metaphor in its data structures. Each file in the data base is represented by a table; a row is a

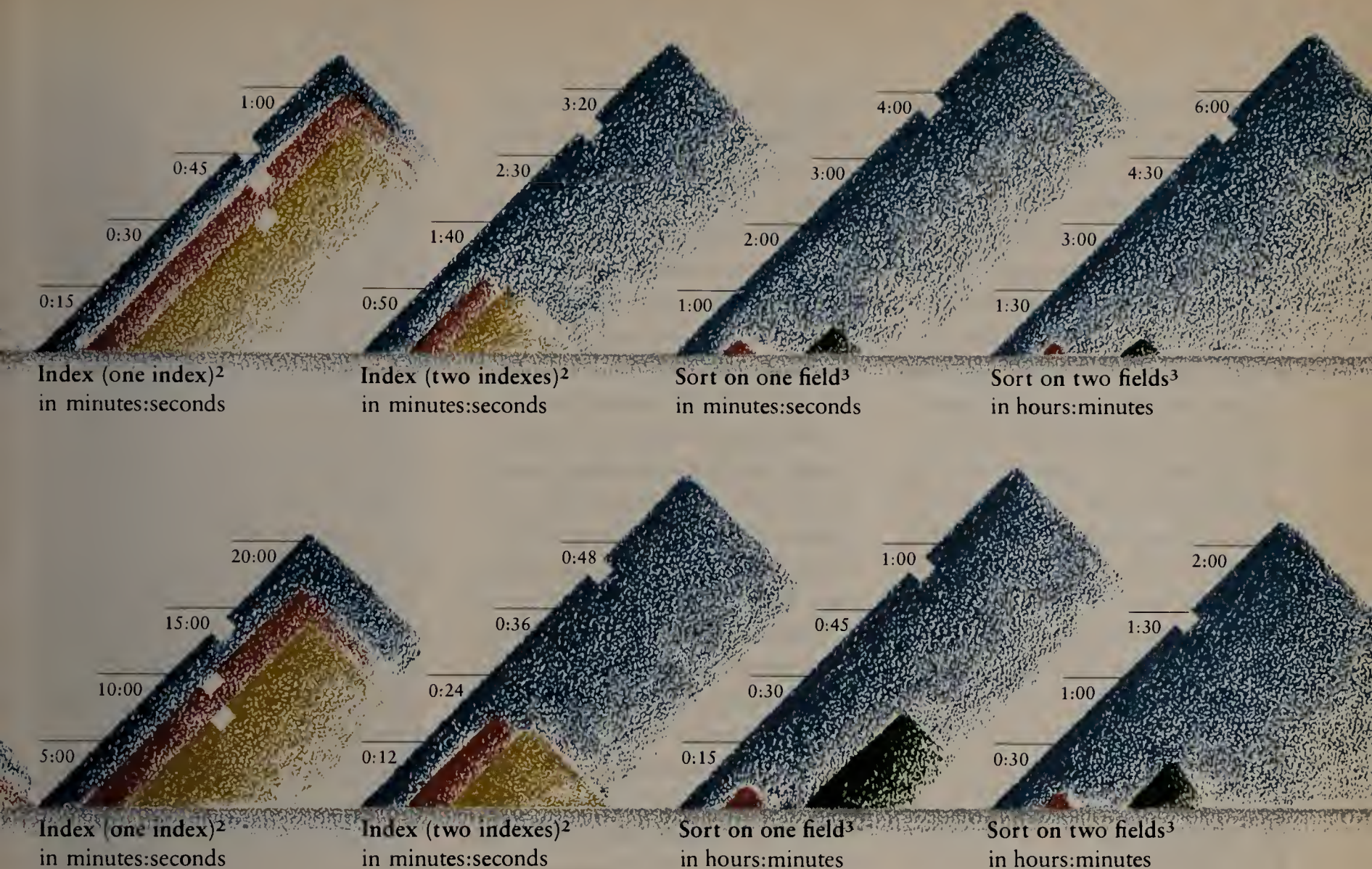
record, and a column is a field. Up to five tables can fit on screen at once, with more just beyond the screen's borders. You can scroll down or across to widen or focus your view. If you'd rather study the details of a single record, you simply point the cursor and press a function key to view it in a more conventional, *dBASE*-like format.

From the beginning *Paradox* offered a good range of data entry features, letting you design up to 10 data entry forms per table—using as many as 15 pages per form. You can also specify a wide range of data-checking operations when you design entry screens, including lowest and highest acceptable values, default values, and mandatory fields.

One persistent criticism of the earlier *Paradox*, however, was that you couldn't use one data entry

screen as a design template for several different files. New options on the Modify and Tools menus bypass this limit. Now you can create a single customer entry form, for example, that sends selected data to both a sales table and a separate mailing list table. To accomplish this you just choose the operation from the menu and then place check marks in tables where you want the data to go.

Paradox's major new addition is ApGen, an application generator that churns out programs in PAL, the Paradox Application Language. Present in the original version, PAL feels like a combination of Pascal and the *Symphony* command language. Like Pascal, PAL



includes the power to specify private and global variables, recursion, and dynamic allocation of variables, and most important, to define procedures. With PAL, you can create your own *Paradox* function libraries using subroutines as many times as you like without rewriting them. As with *Symphony*, cursor movements, function key commands, and the like are delimited by curly brackets. All this power comes with a solid base of mathematical, statistical, financial, and string-parsing functions, as well as the basic logical controls of IF... THEN... ELSE, WHILE... ENDWHILE, and SWITCH... CASE.

The drawback of any programming language, of course, is that you have to learn it. That's where ApGen comes in. As with the ap-

plication generators in *dBASE III Plus* and *R:base System V*, you begin building an application in ApGen by constructing a menu system. Once you've mapped out the menu hierarchy and relationships, you can define the *Paradox* actions performed by each menu item. Defining these actions using an option on ApGen's menu is like writing a script (or macro) file. A single application can reference as many as 15 different tables. When you've finished defining menu actions, ApGen churns out the PAL program code without your ever having to learn the difference between NIMAGES and NUMVALS.

Q&A and askSAM beat Paradox on search and replace operations. pfs:professional file slows as files grow. Although pfs:professional file looks quickest on index operations, it can use only one key, so Paradox wins that heat. Tests were conducted on a PC's Limited AT running at 6 MHz with 1MB of RAM and a 40MB Seagate voice-coil drive. Tests were conducted by The Lambda Group.

¹Times are the same for one and two fields except in the case of askSam, which took 46 seconds to locate the last record in a file with one field.

²Does not apply to askSam

³Does not apply to pfs:professional file

Application programming is serious business in some quarters, and the natural question is whether an ApGen program can pack the punch of a well-tuned *dBASE* or *R:base* program. The answer is *maybe*. For example, ApGen can't duplicate *R:base*'s CrossTab command, although the command could be jury-rigged directly in PAL. Even if you go directly into PAL, however, you may discover that PAL can't quite match the refinement of *dBASE III*'s GETENV and ISLOWER/ISUPPER functions.

One surprising limitation is that *Paradox* still doesn't allow records

with duplicates in key fields. In other words, if your table is indexed on a certain field, no two records can have the same data in that field. While this may be fine for customer numbers—which should be unique—it isn't so fine for last names or zip codes, which are often duplicated. Given *Paradox*'s general quickness and the 65,000-record limit of its files, Ansa's solution—to include a second (or third) tiebreaker key—doesn't slow things down that much. But it does seem an unnecessary irritation.

More serious, as of this writing Ansa has yet to announce support for expanded memory—significant because *Paradox* achieves its lively performance by holding as much data as possible in RAM.

ApGen's best feature is the Runtime module, a \$9.95 version of the *Paradox* system that runs any PAL or ApGen-created PAL program. Better still, you can legally make up to 250 copies of Runtime and distribute them with your PAL programs. Runtime is a convenient and inexpensive solution to the distribution dilemma.

A few other improvements are also worth noting in the new version. ASCII-delimited files can now be appended to existing tables, or a new table can be automatically created using generic column names, field lengths, and field types derived from the delimited file. As before, exporting and importing *dBASE II* and *III* files are straightforward menu-driven operations. The manual shows you exactly how the conversion will operate on each field type.

Import and export options both now permit you to read and write

files from *1-2-3* version 2.0 and *Symphony* version 1.1. A new option on the *Paradox* Tools menu lets you temporarily exit to DOS, run a small program, and return to the program, as you can with *Q&A*. And—good news indeed—copy protection has been removed.

With ApGen, the *Runtime* module, and the ability to link a form to more than one table, the new *Paradox* achieves a quiet improvement. But modest change is fine, given that this quick, comprehensive, and comprehensible program was a winner in the first place. It may not have the haymaker needed to floor the competition, but it certainly delivers an impressive one-two punch—relational power *and* ease of use. ☯

Executive Summary

Paradox

Relational data base management program

A responsive and powerful multi-file data base manager, *Paradox* is easy to learn and use. 1-2-3-like menus and a tabular format for fields and records provide an unusual visual perspective on complex data structures. A new menu-driven application generator and more flexible form-to-file relationships add muscle to *Paradox 1.1*.

User interface	<i>Excellent</i>
Data entry features	<i>Good</i>
Search/sort capabilities	<i>Good</i>
dBASE-file compatibility	<i>Excellent</i>
Overall value	<i>Good</i>

William Urschel is president of Arc Tangent, a data-base-oriented software development firm in Santa Barbara, California.

Paradox version 1.1

Ansa Software

1301 Shoreway Rd.

Belmont, CA 94002

415/595-4469

List price: \$695

Requirements: 512K (640K with ApGen), hard disk recommended

Not copy protected

Snappy Answers

Q&A version 2.0

has power,

flexibility, glitz,

and now speedier queries—

what more could

you ask of a

flat-file manager?

JEFF WALDEN



'Call me Otto', suggests the on-line tutorial for Q&A's Intelligent Assistant. And the new user sees no reason not to, because the natural language front end hatched by Symantec Corporation's designers is polite and eager to please. The program's helpful user interface invites comparison with Software Publishing's *pfs:professional file*, but Q&A clearly out-classes *file* in capability, imagination, and personality.

Q&A is a flat-file data management program more appropriate for storing data series (names and addresses, Dow Jones averages) than for performing transactional applications (such as determining inventory levels for a retail business). Though primarily menu-driven, Q&A comes equipped with powerful programming statements; modules for filing, reporting, and word processing; and Otto, who handles queries so intelligently. As might be expected of such a feature-rich program, Q&A requires a lot of RAM—a minimum of 512K; 640K is more comfortable, especially if you need large macro files or use RAM-resident utilities.

Early Q&A users had two major complaints. The six-disk distribution of program files was confounding: Disks had to be installed to a hard drive in precise order without cogent guidance from the manual. And the Intelligent Assistant moved through its query chores so slowly that it seemed more a training device than an everyday tool.

For a mere \$50 more than the cost of its predecessor, version 2.0 addresses both problems—and more. The rewritten manual includes a more explicit section on

installation. The raft of new features includes a bigger lookup table, more commands and indexing options, expanded macro functions, and greater connectivity. Most significantly, the Intelligent Assistant is faster—as much as four times faster, depending on the size of your data base and the complexity of your query.

As a nonrelational data manager, Q&A can't perform the multifile operations of a *dBASE* or *Paradox*, but its lookup table provides fair cross-referencing power. Version 2.0 expands lookup capacity to 64,000 characters, which amounts to roughly 600 entries; a single keyword will reference up to four values. You can also delete lines in the table, a facility that comes in handy for speedier data entry and for scrapping a few rows and getting out when you've exceeded table capacity.

With 2.0, Symantec has beefed up Q&A's already impressive list of programming commands. The program includes seven new math functions; multiple nesting of IF ... THEN ... ELSE conditionals; and automatic date, time, and page number stamping. If only Q&A included a gosub statement, there'd be enough programming punch to develop turnkey applications.

Q&A supports a more complex indexing scheme than most flat-file managers, increasing the program's overall flexibility. *Alpha/ three* allows only five indexes to be open at one time, *pfs:professional file* indexes only the first field, and neither *Reflex* nor *askSam* indexes

at all. With Q&A you've got options: You can remove all indexing operations and speed up sort times, or you can specify as many as 115 separate indexes, thereby accelerating field-specific searches.

boilerplate paragraphs. Regular Q&A users will probably find macros most helpful for bypassing menu layers and for streamlining operations in the Intelligent Assistant.

so you may find yourself sitting through several print trials to get an acceptable-looking merge.

New formatting commands for handling ASCII files also enhance connectivity. From the Type/Edit mode of the Write module, you can export a document directly into ASCII format with the press of a function key. You can also select a pageless format and suppress margins for cleaner transmittal of files.

Knowing there's no rest even for the best in this competitive market, Symantec is already forging

With 2.0, Symantec has beefed up Q&A's already impressive list of programming commands.

Version 2.0 also makes sure data is unique. You access this function as you do other indexing chores—through the Speed Up Searches option. Press S to speed up (or index) the field, and U to indicate that it should be a unique value. Q&A will then search all instances of that field to determine if the value entered is unique—useful for validating social security numbers and the like. Other validation features include range checking, correcting data on input, and rejecting out of bounds data.

Q&A doesn't give you a library listing of your macros as *pfs:professional file* does, but Symantec's macro system is more flexible. With the latest version, you can have as many macro files as disk space allows, although only one macro file loads into memory at a time. Q&A also lets you write macros that pause for direct entry, a feature especially useful for handling command sequences that branch or for individualizing

Q&A now supports file locking on most prominent local area networks that use DOS 3.10. Q&A works with 3COM, Novell, IBM's Token-Ring, and other file serving systems whose networking software doesn't occupy more than 128K; larger programs infringe on Q&A's voracious appetite for RAM.

Version 2.0 also makes accessing other applications much easier. From Q&A's utilities menu, you can specify the drive, path, and file name of the application you'll be switching to—such as *1-2-3*, *Word-Perfect*, or *dBASE III*. That program will then appear as an option on Q&A's main menu screen; you can run it without ever looking at the DOS prompt.

Furthermore, you can now drop graphics into reports from applications such as *1-2-3* and *pfs:graph*, and import spreadsheets (or selected ranges of spreadsheet files) from *1-2-3* and *Symphony*. To capture these files, you position the cursor on a blank line of the Q&A host document and type in the appropriate asterisk command, specifying the file name, cell ranges, or graphics resolution you want. Unfortunately, you can't preview your imports on screen,

Executive Summary

Q&A

Single-file data base manager

Significantly faster in this release, Q&A version 2.0 is a feature-packed file manager. It includes a smooth menuing system, powerful commands, extensive word processing capabilities, and a state-of-the-art natural language front end that brings ease, power, and flexibility to query and report chores. It requires a minimum of 512K RAM, but works better with more.

User interface	Excellent
Data entry features	Excellent
Search/sort capabilities	Excellent
Reporting features	Excellent
dBASE III file compatibility	Good
Overall value	Excellent

ahead. As of this writing, the company had just announced support for the 386 market. Q&A 386 will support the 80386 chip's instruction set and the Lotus/Intel/Microsoft expanded memory specification and will run under DOS 3.xx. Assuming your 386 machine also provides fast disk access, Symantec claims its recompiled Q&A 386 will be another 20 to 40 percent faster than version 2.0 on an 80286 machine.

Obviously, Symantec is committed to keeping its product current. The company anticipates shifts in the hardware markets and plans to increase capability, power, and connectivity in Q&A. Although Symantec is careful not to call Q&A's natural language front end artificial intelligence, several Symantec founders have roots in the AI community, and AI technology clearly informs Otto's persona. With the performance gains of version 2.0, Q&A power users may find that Otto isn't just a beginner's crutch—he's a useful fellow. ●

Jeff Walden is a freelance writer who recently completed a book about Q&A for Osborne/McGraw-Hill (Berkeley, California, 1987).

Q&A
Symantec Corp.
10201 Torre Ave.
Cupertino, CA 95014
408/973-9597
List Price: \$349, add-on
thesaurus \$50

pfs:file Goes Pro

*The latest pfs
offering is attractive,
well connected,
and easy
to get along with.*

RICHARD H. BAKER



Elegant and smooth as a French actress of indeterminate age, Software Publishing's *pfs:professional file* combines glamorous surface and skilled performance in a durable package. Introduced last summer, *professional file* pairs Software Publishing's hugely successful "shoe-box" data management duo, *pfs:file* and *pfs:report*. *professional file* uses graphics beautifully, introduces several important new functions, and melds ease of use into all its attributes. If comparably priced data managers offer more analytic functions, none is more attractive, easier to use, or more protective of its user than *professional file*.

professional file enables you to do everything from customization to data entry to reporting in one attractive, coherent environment. As you select submenus, the layers stack on the screen, helping you visualize your level within the program. From a single setup menu, you can list file names or change screen colors, printer settings, and default directory. And the system provides plenty of stretch: You can assign 3200 fields per record and 29,500 records per file.

Like most flat file managers, *professional file* is oriented more toward easy data entry and reporting than heavy-duty data analysis. Software Publishing makes forms design and data entry speedy and painless, providing a more useful mix of editing functions than many word processors. You can insert and delete lines; jump to the next or previous line, word, field, page, or form; erase whole fields or pages; undo changes; calculate the page; and duplicate fields, pages, or forms.

When you're finished designing the form, *professional file* sets up the data base, automatically assigning the field lengths and data types you've specified.

Further help in the data entry process is available through *professional file*'s macro facility. Using <Alt>-key combinations, you can create up to 35 keyboard macros with as many as 40 keystrokes each. You replay a macro by pressing the <Alt>-key combination you assigned or by choosing from a macro menu list. The list includes space for a brief description of each macro and can be printed for reference.

Although this program won't appeal to users of high-end data bases—whose file relationships can reach soap-opera levels of entanglement—the simplicity of *professional file* can be a bit deceptive. Because setting up a form also es-

tablishes the file structure, you have to plan the arrangement of fields carefully. The order of information on printed labels, for instance, must match the order of fields on the file form—a restriction not shared by most data managers.

The order of calculated fields is also important. If the field you designate for a calculation result does not appear last in the calculation sequence, *professional file* delivers an error message. Furthermore, although each *professional file* record can be up to 32 pages long, calculations can be carried out only among fields on a single page.

Software Publishing has anticipated the snarls these limitations might create. The manual spells out the long-term implications of design decisions. And context-sensitive help appears with a touch of the <F1> key, offering explanations, tips, references, warnings, and recommended remedies accompanying many error messages.

With this addition to the *pfs* line, Software Publishing supports the expanded memory specification (EMS)—good news for users of Intel's AboveBoard and other EMS boards. *professional file* is completely RAM resident (which speeds searches), but it works with a curious twist. Instead of loading a file into RAM as soon as you call it up, *professional file* waits until you've pressed keys to perform a function on that file—a search or a sort, for instance. Thus the first operation on a given file may seem slow, but subsequent responses will be quicker.

professional file offers a fair amount of analytic power for a low-end data manager, supporting all the Boolean operands and a multiple-field search capability. If

you need more analytic capability in your search and sort operations, however, you're probably better off with a different file manager. Borland's *Reflex*, for instance, offers many more search and sort functions for \$100 less than the *pfs* price tag (see "Tender Offers: Reflex Takes Over," PCW, April 1986).

professional file's indexing strategy is also fairly simplistic. The program automatically indexes the first field of a file, but you cannot specify that any other fields be indexed, nor can you remove the index that *file* provides—flexibility that other flat file managers (*Q&A*, for instance) offer. But with these more versatile products you must devise indexing strategies and sit through laborious indexing operations—chores Software Publishing has decided to spare you.

A handy preview feature lets you display a report before printing. The program offers compressed, underscored, and bold print—not quite the list of printing enhancements Nashoba Systems' *Nutshell* provides, but adequate for most users.

Spreadsheet users will feel at home with *professional file*'s new row-and-column Crosstab Report facility. Crosstab reports can summarize data from three variables (or fields) in tabular format. Though this feature doesn't provide the referencing power of, say, *Q&A*'s lookup table, you can use total, average, minimum or maximum value, and count functions. To produce similar reports with *dBASE*, you'd have to write a program.

Another piece of good news for spreadsheet users is *professional*

Executive Summary

pfs:professional file

Flat file data manager and reporting program

As a RAM-resident manager of single data files with an elegant, easy-to-learn user interface, *pfs:professional file* excels, but at the expense of flexibility and analytic function.

User interface	Excellent
Data entry features	Excellent
Search/sort capabilities	Fair
Reporting features	Fair
dBASE file compatibility	Good
Overall value	Good

file's menu option for importing and exporting 1-2-3 files. Since *dBASE* has long included a utility to export its files into *pfs* format, Software Publishing did not add a *dBASE* import facility. You can export files to *dBASE III Plus* by using *professional file's* comma-delimited ASCII format.

New features enhance the product for office networks. If all nodes on a network have DOS 3.10 and at least 512K of memory, network users can share *professional file* data. But before installing the program on a network server, you must purchase and install *pfs:professional network*.

professional file's obvious, incontrovertible plus is its ease of use: From the beautifully designed graphic interface to the explicit error messages to the clear, helpful manual, this product pampers you. For keeping track of sales contacts and working with 1-2-3 or *dBASE* files or other low-end, single-file applications, *professional file*—dressed up and well connected—provides an elegant solution. If you need flexibility and analytic punch, however, you can find a better buy. ●

Richard H. Baker is the author of several books on dBASE techniques and applications.

pfs:professional! file
Software Publishing Corp.
1901 Landings Dr.
Mountain View, CA 94039
415/962-0191

List price: \$249

Requirements: 256K (384K with
DOS 3.20), DOS 2.00 or later
version, two disk drives

Not copy protected

Garbage In, Structure Out

*With a compact
and capable
flat-file manager
called askSam—
and some rethinking
of basic data-handling
concepts—you can turn
chaotic entries
into structured reports.*

GEORGE R. BEINHORN AND
MARLENE NESARY



Electronic data storage encourages a binary view of the world, but some information is as analog as the people and ideas it describes. Take a "contacts" file, for instance. Predictably, it contains names, addresses, and phone numbers. Unpredictably, it may include amount billed, dates, colleges, mutual acquaintances, kids' names, favorite floral arrangements, and a few sentences summarizing a previous discussion. Anticipating which data will become valuable isn't always easy.

Where can you find a program that both allows free-form input and provides the tools for structured output? Utilities such as Micro Logic's *Tornado Notes* offer computerized notepads for storing reminders, but their data organizing ability is minimal. By indexing everything in a file, text-oriented file managers such as Nashoba Systems' *Nutshell* expand your ability to search for the odd or unique word, but data must still be structured into fields on entry. And while powerhouse programs like *dBASE* have memo fields where you can store unstructured comments, you can't search them for a particular word.

askSam, a compact, flat-file manager from Seaside Software, purports to be the answer to organizing the unorganizable. It combines a powerful command language, word processing functions, and the ability to search for any word or number string in the data base. Especially appropriate for handling records that are actually unstructured text files, *askSam* achieves its remarkable flexibility by turning the traditional idea of data base fields on its ear. With *askSam*, you needn't designate

field type, length, or placement before you enter data. You can, however, assign fields after the fact by using word-processing-like search techniques. Combine this flexibility with *askSam*'s more conventional file management techniques, and you have a program that offers new potential for text data management—if you're willing to master a complex, two-pronged approach.

The program begins simply enough. With a hard disk, you create a subdirectory and copy

askSam files using a batch-installation program. Although *askSam* requires only 256K, it can handle an unlimited number of records and files.

Though it's not nearly as seductive as the *pfs:professional file* interface, *askSam*'s initial menu screen shows that you're dealing with a serious data manager. You'll find options for setting passwords and encrypting data, executing stored programs, and even packing, recovering, and backing up files. To access operations and submenus, you press the first letter of the listed option.

Data entry couldn't be easier. You name a file and an Add Record screen appears. Inside the screen's borders you can type anything—comments about a meeting, notes for an article, a name and address, or whatever you need. If you need help, pressing <F1> lists the function key commands along the bottom of your screen.

With the latest version (3.0) of *askSam*, you're no longer limited to 20 lines per record; a new command links individual records into one "document" so they can be effectively treated as a unit for search, report, file transfer, and other operations. This is especially useful for building long documents from chunks of data. (A file can be up to 4MB long.)

The most straightforward querying you can do with *askSam* involves its uniquely powerful word-processor-like search function. Without regard to field designations, *askSam* will search for any word or string in a file, just like a word processor performing a global search operation. Yet because it is a data base program,

you can use Boolean operators, wild cards, and range delimiters to give your search more precision. Furthermore, you can add, delete, or replace the first occurrence or all occurrences of a word or string and route the search results to disk, screen, or printer.

Less simple is *askSam*'s use of three field designations—explicit, implicit, and contextual. Probably the most familiar to users of conventional data bases, explicit fields are identified by a field name and an opening bracket (NAME[, for example). Use explicit fields for data you know you'll be sorting on or regularly using in reports.

While explicit fields may be up to one line (80 characters) long, implicit fields are limited to a single word. You can assign a unique beginning to any text or numbers you want identified—such as a dollar sign for retrieving and calculating sales totals.

Using either explicit or implicit fields for retrievals requires manually tagging data with a field indicator—such as square brackets or a unique identifier. Although you can assign tags after record creation and before report generation, they're obviously less trouble if you plan them and use them in initial data entry—just as you do with any structured data base system.

askSam's real suitability for managing free-form or textual data becomes apparent when you experiment with contextual fields. You can search for any word (or number string), specifying whether you want to retrieve that

Executive Summary

askSam

Text-oriented flat-file manager

With single-file data bases, *askSam* has a unique ability to handle incoming data and store it without regard for field designations, while providing an extremely sophisticated command language for extracting and reporting in an orderly manner. Inadequate documentation, uninformative screens, and clunky file transfers make learning and using *askSam* more difficult than they should be.

User interface	Fair
Data entry features	Good
Search/sort capabilities	Excellent
Reporting features	Good
dBASE-file compatibility	Fair
Overall value	Good

single word, the line it's on, or the whole record or linked document where the word appears. A specialized law practice, for example, might use this feature to retrieve records in which the word *negligence* or *incompetence* appeared, string these into a linked document, and use *askSam*'s word processor to produce a brief.

askSam has an impressive array of editing commands. Using <Alt>-key combinations, you can perform block moves, set the program for overstrike or insert, reformat paragraphs within margins (which you can set and change), specify word wrap, and use function keys to generate primitive macros. *Q&A* offers as many word processing features—but its cost in dollars and RAM is significantly higher.

askSam's command language is likewise function-rich, offering

Boolean operators, batch updating, memory variables, comparators for date and numeric fields, and even IF... THEN... ELSE conditionals. The program supports min/max, average, and count operations and can format reports with total and subtotal breaks, headers, and page numbers. This data retrieval system is far more powerful than *pfs:professional file*'s and is as flexible (though not as imaginative) as *Q&A*'s Intelligent Assistant.

askSam's manual, like its user interface, suffers in comparison with other flat-file sophisticates like *pfs:professional file* and *Q&A*. Lackluster and incomplete, the manual needs more tutorials and a better discussion of how to use and assign field types. A forthcoming revision of the manual promises to address these problems. To its credit, Seaside offers free phone support and a bulletin board service.

Users can upload troublesome files for diagnosis and repair on Seaside's bulletin board. They can also download a *dBASE* file transfer utility called Insert. Like *askSam*'s ASCII file import and export features, however, Insert is awkward to use and full of steps that more considerate programs (such as *Alpha/three*) mask.

In the end *askSam* is as tough to classify as half the jottings in a tickler file. Data-handling tools as flexible and powerful as those of any flat-file manager operate in what is—by today's standards—a dull visual interface. Yet for the adventurous data handler, *askSam* implements a revolutionary idea—informal, contextual fields. If you're willing to learn new techniques for extracting data—with little help from documentation—*askSam* can provide creative solutions. ●

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EXECUTE PROGRAM <Esc> cancel <other> continue

:sample

:sample {DETAIL SKIP 0}
{JUSTIFY 25 TOTAL :C begin}}
{JUSTIFY 46 TOTAL :C sold}
begin> - sold[-> net {JUSTIFY 70 TOTAL :C net} net* <-

05-04-87	Sample Report	Page 1
Beginning	Amount Sold	Ending Balance
500	170	330
300	255	45
1,200	1,050	150
2,000	1,475	525

-END-

Lots of flexibility in designing reports also means lots of time spent fine-tuning *askSam* formats.

askSam version 3.0
Seaside Software
P.O. Box 31
Perry, FL 32347
800-3-ASKSAM, 904/584-6590
List price: \$200
Requirements: 128K, DOS 2.00
or later version
Not copy protected

S P R E A D S H E E T S



SILK

SUPERCALC 4

WORDS & FIGURES

PFS:PROFESSIONAL PLAN 1.0

PLANPERFECT 3.0

Professional Planning Power

*With pfs:professional plan,
Software Publishing,
long the master
of ease of use,
demonstrates
an uncanny gift
for spreadsheet power.*

JOHN WALKENBACH



Lotus's 1-2-3, arguably the product that lured corporate hearts and minds to personal computing, is entering its autumn years. As new operating systems and environments beckon, Lotus has marshalled an army of internal and third-party developers behind an energetic bid to keep its breadwinner from suffering a midlife crisis.

Although its core is little changed, this program-cum-environment has been adorned with diverse add-ins (like *4Word*, *Write-In*, and *Goal Solutions*) and rejuvenated with HAL, a potent English language interface and all-around elixir.

The 1-2-3 you buy today carries the release 2.01 designation—a reflection of its most recent maintenance. The new version has been sprayed for bugs and delivers quicker disk access. At the same time, software shelves are brimming with pretenders to 1-2-3's throne. The better offerings encompass 1-2-3-like accoutrements without the added baggage of extra RAM or the cost of procuring a 1-2-3 utility.

Still, butting heads with 1-2-3 requires at least two sterling qualities: guts and a very good program. Software Publishing appears to have both, if *pfs:professional plan*—the company's first excursion into the high-end spreadsheet market—is any indication. If any product can give 1-2-3 a run for its money, it's *professional plan*.

Rather than cloning 1-2-3 and then larding that copy with extra features, Software Publishing started from scratch. The result is a refreshingly new spreadsheet clad in a daringly different user interface. In keeping with company

tradition, the underlying dictum throughout has remained ease of use.

Despite its unorthodox approach, *professional plan* retains an absolutely essential capability: It can import and export 1-2-3 worksheet files in either .WKS or .WK1 format. Although you won't find mention of it in the documentation, the program can also read and write *Symphony* files. *professional plan* can't swallow Lotus macros, however.

For 1-2-3 veterans, *professional plan*'s most striking trait may be its ledgerlike appearance. The program greets you with rows and columns, but those columns are separated by vertical lines; outside the normal worksheet borders are an extra row and column to hold variable names. (If you yearn for

the 1-2-3 look, you can easily extinguish the grid.)

professional plan's pulldown menus provide quick navigation through the program, sparing you the potential confusion inherent in a 1-2-3-style hierarchical menu structure. Here, the action has moved from the slash key to the function keys. A speed-key facility permits you to execute common commands with a variety of mnemonic <Ctrl>-key combinations.

The program's additional row and column are more than window dressing; they're the basis for *professional plan*'s edge in the ease-of-use department. They enable you not only to include row and column names in formulas but

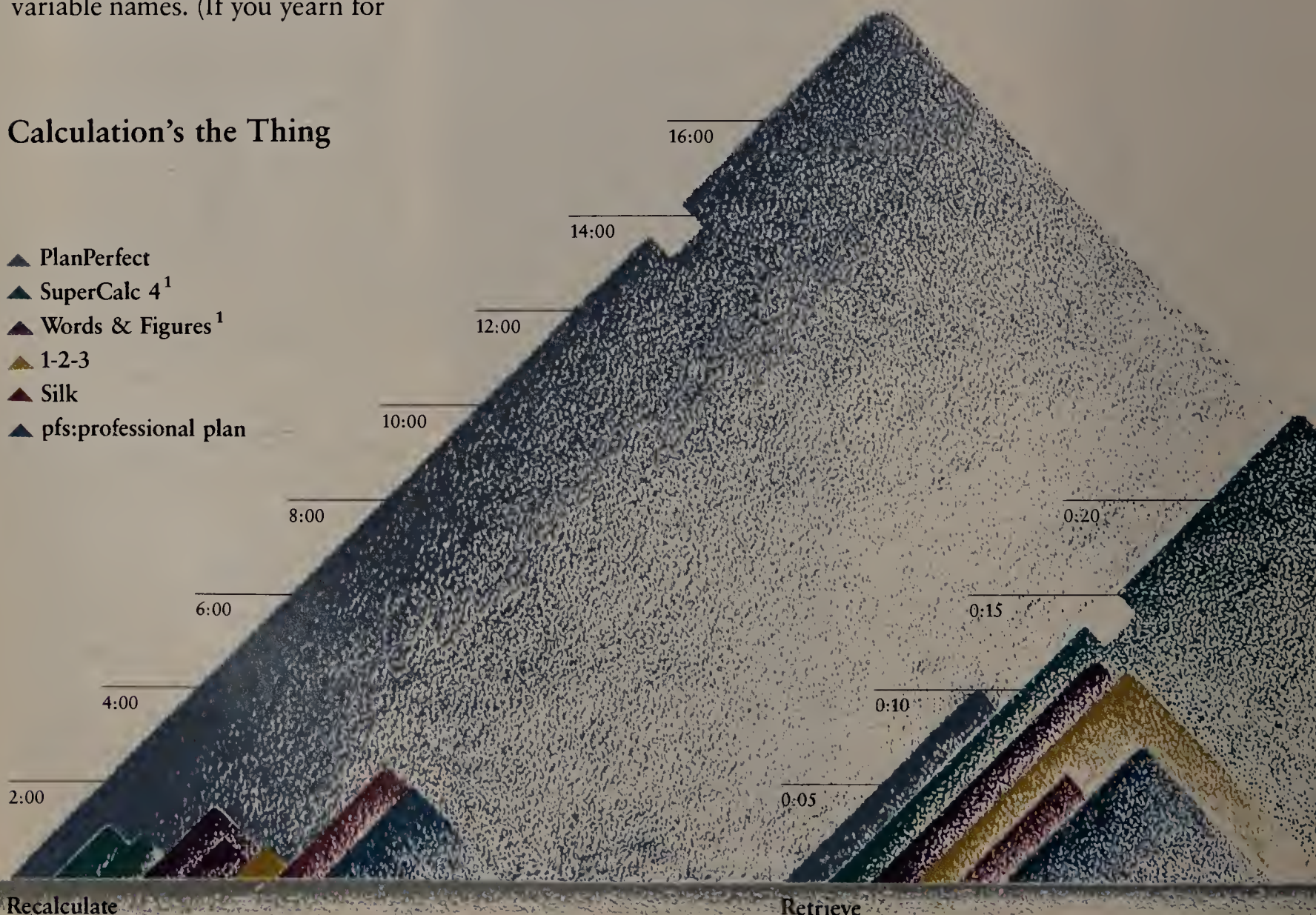
also to enter formulas that affect an entire row or column.

The ability to use row and column titles as variable names, a simple yet highly useful addition, provides spreadsheets with a new level of self-documentation and generally makes life easier when you return to a model after a hiatus. Rather than struggle with an obscure formula like +D45 - D97, for example, you can write one that reads Income - Expenses. In addition, row and column titles remain fixed on the screen, so you can maintain your bearings without resorting to title-locking commands.

In situations where you must refer to a cell by its coordinates,

Calculation's the Thing

- ▲ PlanPerfect
- ▲ SuperCalc 4¹
- ▲ Words & Figures¹
- ▲ 1-2-3
- ▲ Silk
- ▲ pfs:professional plan



¹ When the test file was first loaded, it consistently recalculated at the slower time shown; thereafter, it consistently recalculated at the faster time.

professional plan is accommodating. Unlike 1-2-3's letter-number notation, *professional plan*'s scheme relies on RC (row/column) syntax. Cell C5 in a 1-2-3 worksheet, for instance, would be addressed as R5C3 in *professional plan*.

While this approach may initially seem more cumbersome, its virtues emerge when you don't need both coordinates. To subtract the values in Row 7 from those in Row 6, for example, you don't need to copy a formula to each cell in the row. A single formula, R6 - R7, placed in the row-name column, will do the trick.

1-2-3's split-screen window capability lets you view and manipulate two separate areas of a worksheet. If you use this feature regularly, you know that it usually requires manic window-jumping. Here too, *professional plan* takes a different tack, eschewing windows altogether. In their place is a clever time-saving feature known as "views."

With *professional plan*, you create a custom view of your

worksheet by specifying any number of rows and columns—regions that need not be adjacent. This unique visual slant is an inspired addition to the program. When you request a specific view, extraneous data temporarily vanishes, freeing you to concentrate on pertinent information. You can, for example, build a view consisting exclusively of your budget's summary rows and columns.

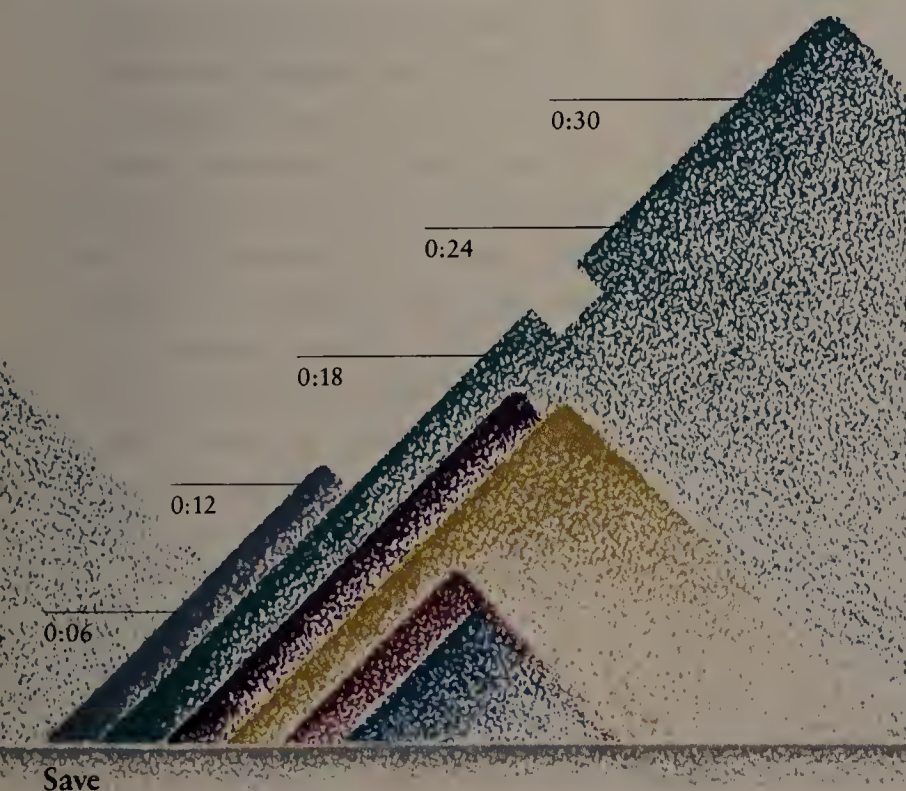
You can define up to 24 views for each worksheet and switch among them as you like. If you're tired of riding the range as you move or copy data for reporting purposes, you can use views to produce reports that include only the information you need. And if that's not enough, you can save a view as a separate worksheet.

professional plan's plentiful attributes closely parallel those of 1-2-3 in both function and format (including @functions). English variable names will, of course, work as parameters in all functions. For good measure, *professional plan* offers automatic col-

umn-width adjustment, network support, automatic page numbering, and a template-building function that enables you to erase all data but preserve formulas.

This Software Publishing upstart integrates a handful of operations that 1-2-3 delivers only through add-ons. For example, *professional plan* provides built-in goal seeking, essentially a backward "what if" process. Goal seeking lets you solve for the values (such as overall sales) needed to reach a desired outcome (such as profit level). *professional plan*'s quick-entry mode automatically enters sequential names, such as months or days of the week. With 1-2-3, you need to hire HAL to get that job done.

The program also enables you to consolidate information in multiple worksheets. Whereas consolidation is possible (although not necessarily desirable) in 1-2-3, *professional plan* handles aggregation in the right way. Its Consolidate feature searches for matching row and column names in multiple worksheets, bypassing 1-2-3's requirement that worksheets share



As this graph shows, most spreadsheet programs fetch or save a worksheet in about the same time. But when it comes to recalculations, 1-2-3 is 2, 4, or even more than 40 times faster than the competition. The tests used a 152K 1-2-3 sample business plan consisting primarily of multiplication and sum functions. Tests were conducted on a PC's Limited AT running at 6 MHz with 1MB of RAM and a 40MB Seagate voice-coil drive. Times are shown in minutes:seconds. Tests were conducted by The Lambda Group.

identical formats. A second feature, Matchups, allows you to specify synonyms so that even inexact row and column matches work. You can, for example, stipulate that *March* and *Mar* be interchangeable.

Although *professional plan* boasts built-in formula-auditing capabilities, that boast is somewhat idle. The auditor merely displays all formulas at once but doesn't offer interactive tracing and debugging—or even permit you to identify dependent or precedent cells.

Macros, fortunately, are a different story. *professional plan*'s macro capability leaves 1-2-3's at the starting gate. Most notably, it can record your keystrokes as you make them—a feature 1-2-3 lacks. *professional plan* stores macros in separate files, so they're accessible from any worksheet. And, like 1-2-3, it contains a retinue of sophisticated macro commands.

professional plan's graphs look spiffier than 1-2-3's charts on screen. The program previews graphs exactly as they'll be printed, including varied text sizes and fonts. The price you pay for this verisimilitude is time—processing typically requires a few extra seconds. *professional plan* can tuck graphs into a worksheet and then print that file, and it adds support for high/low/close graphs, area charts, and multiple on-screen pie charts.

As good as *professional plan* is, it does have its liabilities. Notably absent is support for expanded

memory—a feature Lotus pioneered. For the many users who require spreadsheets larger than conventional memory can handle, this omission is baffling. In theory, *professional plan* is a spreadsheet of biblical proportions, with a maximum size of 32,766 rows and columns. In practice, it's impossible to even come close to filling that matrix.

professional plan is shy a complement of data management commands. Although the program can store field-based data, it simply

doesn't offer 1-2-3's array of data functions. Perhaps protective of its own file manager, Software Publishing apparently decided to limit this product to its strong suits—spreadsheets and graphics.

Also absent are such sophisticated 1-2-3 features as matrix and regression analysis and the capability to parse text strings into columnar data. Additionally, *professional plan* lacks a command to temporarily exit to DOS—a particularly troublesome drawback in light of the program's minimal DOS services.

In a head-to-head timing test, 1-2-3 won where it counts—in recalculation speed—completing most recalculation twice as quickly as *professional plan*. Indeed, except for file retrieval and saves, *professional plan* was more sluggish throughout, although the differences weren't as pronounced on an AT-class system. Like 1-2-3 release 2, *professional plan* supports the 8087/80287 numeric coprocessor.

Does Lotus really have to worry about *professional plan*? Yes and no. Innovative products like *professional plan* clearly demonstrate that 1-2-3 is an aging giant—one that continues to attract challenges. Spreadsheet products in the mold of *professional plan* and Daybreak Technologies' *Silk* offer a number of palpable advantages and will tempt an increasing population of decision makers. Analytical tools such as *Javelin* provide competition on yet another

Executive Summary

pfs:professional plan

Spreadsheet software

Software Publishing's spreadsheet is packed with conceptual improvements on the Lotus standard: pulldown menus, English variable names, innovative view and cell-addressing features, goal seeking, and worksheet consolidation. Still, the program's auditing feature is weak, performance is just adequate, and data management has apparently been left to *pfs:professional file*. The package inexplicably lacks expanded memory support.

Capacity	Good
Speed/performance	Fair
Data analysis	Excellent
1-2-3 compatibility	Good
Programmability	Excellent
Presentation capabilities	Excellent
Overall value	Excellent

front. But facing every 1-2-3 rival is the inertia of a million-plus fairly satisfied users who feel secure with the market leader—particularly in light of Lotus's commendable attempts to keep the product vital.

Whether or not *professional plan*—or any other program—can siphon off some of 1-2-3's market share remains an open question. Meanwhile, it's reassuring to know that such solid alternatives are at the ready. ●

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pfs:professional plan version 1.0
Software Publishing Corp.
P.O. Box 7210
1901 Landings Dr.
Mountain View, CA 94039-7210
408/848-4391
List price: \$249
Requirements: 384K, 448K for
DOS 3.00 or later version;
DOS 2.00 or later version;
graphics board and monitor
Not copy protected

1-2-3 release 2.01
Lotus Development Corp.
55 Cambridge Pkwy.
Cambridge, MA 02142
800/345-1043
List price: \$495
Requirements: 256K, DOS 2.00
or later version, graphics board
and monitor
Copy protected

Souped-Up SuperCalc

*Tired of anemic graphs
and meek reports?*

*Look up in the sky—
it's bona fide
competition for 1-2-3.*

SCOTT D. PALMER



Using *SuperCalc 4* is a little like piloting a Learjet: If you know what you're doing, you can soar to magnificent heights. If you're faking it, you'll quickly feel the pull of gravity.

On essential features, compatibility, and market share, Computer Associates International's *SuperCalc 4* is currently the most serious threat to 1-2-3's mastery over the spreadsheet market. It matches 1-2-3 feature for feature and adds quite a few tricks of its own. *SuperCalc 4*'s graphics are clearly superior to 1-2-3's, its reporting capabilities are more flexible, it supports more printers, and—unlike 1-2-3—it's not copy protected.

SuperCalc has been a noteworthy program since 1980, but the latest version adds a host of substantial enhancements to *SuperCalc 3* release 2.1. These include a macro Learn mode, full-word (not just single-letter) menus, named ranges that can be accessed at any time, internal file import and export, the ability to store macros in a spreadsheet or separately on disk, increased dimensions (255 columns by 9999 rows), and expanded report formatting. Although *SuperCalc 4* does not offer a worksheet-linking facility—as do *Multiplan* and 1-2-3 (with HAL aboard)—it does support the 8087/80287 numeric coprocessor and the Lotus/Intel/Microsoft expanded memory specification.

The *SuperCalc 4* screen layout differs slightly from 1-2-3's, with the command line decorating the bottom of the screen rather than

the top. *SuperCalc 4* menus and status information claim the bottom four lines of the display. At a glance you can check the current cell's contents, format (formula, text, or repeating text), width, and address; available RAM; worksheet size; cursor direction; and help key assignments.

As with *1-2-3*, you invoke menus with the slash key and then move to the menu option of choice with the cursor keys. Pressing <Enter> repeatedly selects one option after another, until a complete command is displayed on the command line. At that point, unfortunately, even an experienced *SuperCalc* user can get into trouble.

As soon as the command is complete, your next <Enter> instructs *SuperCalc 4* to carry it out. If you'd rather select additional options, you must switch to entering commas. Since there's no undo feature here (will HAL one day rescue *SuperCalc*?), you must get it right the first time.

Otherwise, *SuperCalc 4* is a hospitable environment for heavy-duty data analysis. The program includes 19 financial functions (such as present value and future value), along with the requisite math and statistical operators. It also boasts a formidable tool kit of logical and data management functions, although it lacks the data regression capabilities that help *1-2-3* users analyze points on

a graph. Once again mirroring *1-2-3*, *SuperCalc 4* offers simple data management facilities for tasks such as handling lists.

SuperCalc 4's windowing feature is both flexible and easy to use. You can split the screen vertically or horizontally and set the windows to scroll together or move independently. You can thus examine separate spreadsheet regions in each window. And unlike *1-2-3*, *SuperCalc 4* lets you view the values in each cell in one window, while the adjoining window shows the underlying formulas.

The program can use lookup tables (to calculate tax payments, for example), and its support for naming cell ranges is handy. Overall,

program performance is very quick, although *1-2-3* might be slightly faster in chomping through large spreadsheets. Unlike *1-2-3*, *SuperCalc 4* lets you recalculate just a portion of a worksheet.

For more ambitious users, the package offers sophisticated macro programming capabilities, with a good many more macro commands than you'll find in *1-2-3*. *SuperCalc 4*'s Learn mode records keystrokes and will store them in the worksheet or in a separate disk file.

SuperCalc 4 imports *1-2-3* release 1A and 2 files without much trouble, although it sometimes truncates long cell entries, and it can't interpret Lotus macros. *SuperCalc 3*'s files and macros are completely compatible with its successor's—no mean feat, given *SuperCalc 4*'s full-word menus. The program can write files in a variety of formats, including ASCII and both releases of *1-2-3*.

SuperCalc has long been distinguished by its quality graphics, and this edition's charts remain vastly better than Lotus's. *SuperCalc 4* supports eight graph types (pie, exploded pie, bar, stacked bar, line, area, x-y, and high-low), and you can create up to nine graphs per worksheet. Display options range from vertical/horizontal grids to selectable fonts for headings and labels. You can even design a bar chart so that each numeric value sits atop the bar that represents it.

Executive Summary

SuperCalc 4 Spreadsheet

A high-powered spreadsheet whose roots go back to 1980, *SuperCalc 4* offers ease of use, good performance, excellent graphics and reporting functions, and a wealth of other features. Its greatest weakness is a tendency to funnel users into situations they can't undo.

Capacity	<i>Excellent</i>
Speed/performance	<i>Good</i>
Data analysis	<i>Good</i>
1-2-3 compatibility	<i>Fair</i>
Programmability	<i>Excellent</i>
Presentation capabilities	<i>Excellent</i>
Overall value	<i>Good</i>

Depending on your printer, you can print graphs in anything from draft mode to quadruple density—a mode that lends a dot matrix graph the authority of laser-printed output. Printing graphs from within a spreadsheet is a one-keystroke exercise. That's a far cry from 1-2-3, which requires that you first exit to the Print-Graph module.

SuperCalc 4 supports 99 printers and plotters, nearly double the number supported by 1-2-3 release 2.01. This can be a significant advantage. If you use an HP LaserJet, for example, you're in good stead with *SuperCalc 4*, but you'd have to shell out \$79.95 for a 1-2-3 printer driver.

Print formatting is extremely flexible, with selectable headers, footers, and titles. Funk Software's *Sideways*, which allows you to print out a worksheet in landscape orientation, is bundled in. Best of all, when you print reports, row and column headings are automatically adjusted for the length and width of the page.

SuperCalc 4's manual is clear and well organized. It contains a brief introduction, ten excellent tutorial lessons, and a superb reference section. Although the program has no on-line tutorial, its context-sensitive on-line help works well and lacks only an index.

Telephone support for *SuperCalc 4* is free for the first six months. After that, Computer Associates charges a tidy \$175 a year for phone support and "free" upgrades. At the time of this evaluation, phone support was gener-

TABLE 4: CALIFORNIA/ARIZ					TABLE 4: CALIFORNIA/ARIZONA LE														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
YEAR	TOTAL PRODUCED	PERCENT PRODUCTS	DIVER- SIONS			YEAR	TOTAL PRODUCED	PERCENT PRODUCTS	DIVER- SIONS	BLEND PRICE									
1941	34.4	48.26	46	7		1941	34.4	M7/C7*100	46	.43									
1942	23.4	32.48	32	8		B7+1	23.4	M8/C8*100	32	.6									
1943	29.8	35.57	36	9		B8+1	29.8	M9/C9*100	36	.96									
1944	22.2	16.22	15	10		B9+1	22.2	M10/C10*1	15	1.35									
1945	25.4	23.62	24	11		B10+1	25.4	M11/C11*1	24	1.82									
1946	29.2	37.67	38	12		B11+1	29.2	M12/C12*1	38	.66									
1947	27.8	31.65	32	13		B12+1	27.8	M13/C13*1	32	1									
1948	25.8	34.11	34	14		B13+1	25.8	M14/C14*1	34	.94									
1949	20	22.00	22	15		B14+1	20	M15/C15*1	22	1.76									
1950	22.8	31.58	32	16		B15+1	22.8	M16/C16*1	32	1.43									
1951	27	38.52	39	17		B16+1	27	M17/C17*1	39	1.04									
1952	25.8	34.88	36	18		B17+1	25.8	M18/C18*1	36	1.34									
1953	25.4	34.65	37	19		B18+1	25.4	M19/C19*1	37	1.56									
1954	32.6	47.24	51	20		B19+1	32.6	M20/C20*1	51	1									

← B1

Width: 7 Memory: 107 Last Col/Row:V52

1)_

READY F1:Help F3:Names Ctrl-Break:Cancel

SuperCalc 4's windowing facility lets you split the screen in half to look at worksheets in various lights.

ally on a 24-hour callback basis. The delay was explained as the result of an onslaught of calls around tax time.

SuperCalc 4 version 1.1, not evaluated here, adds local area network support for Novell Advanced Netware, 3Com 3+, and the IBM PC Network and Token-Ring LANs. According to Computer Associates, this release delivers such network services as file locking, spooled network printing, linking and unlinking of directories within the network, and the ability to save a spreadsheet locally if the server crashes.

In short, *SuperCalc 4* is a solid, full-featured, and worthy challenger to Lotus's top gun. With its plentiful features and freedom

from copy protection, *SuperCalc 4* offers more bang for the buck—if you don't need to stick with the standard. ●

Scott D. Palmer has worked in the personal computer industry since 1980.

SuperCalc 4
Computer Associates Int'l, Micro
Products Division
2195 Fortune Dr.
San Jose, CA 95131
408/432-1727
List price: \$495, upgrade from
SuperCalc 3 \$100, three-user
LanPak \$495
Requirements: 256K, two floppy
disk drives (hard drive
recommended), DOS 2.00 or
later version

Smooth as ... 1-2-3?

*Silk, a feature-rich
offering from
Daybreak Technologies,
has come
not to praise 1-2-3,
but to bury it.*

JEFFREY KAHN



In software, timing is crucial. Daybreak Technologies' *Silk* arrives just as several intriguing spreadsheet packages are challenging 1-2-3's turf. While some work-alikes have cloned 1-2-3's fabled look and feel, *Silk* is a bit more distinctive. On appearances alone, the program evokes *Multiplan* as much as Lotus's league-leader. *Silk* captures most of the power of 1-2-3 release 2 and tosses in a number of labor-saving devices, but it is marred by incomplete 1-2-3 compatibility and a few crucial omissions.

Perhaps discerning a glimmer of light in the spreadsheet wars, Daybreak has assumed a public posture that is anything but genteel. Javelin Software's abortive 1-2-3-baiting notwithstanding, Daybreak is hurling verbal missiles at Lotus in an attempt to build name recognition and cut into 1-2-3's installed base. Although *Silk* isn't quite the "software masterpiece" that Daybreak claims, it is a program worthy of serious consideration.

For those in quest of a spreadsheet brimming with features and shorn of 1-2-3's copy protection, *Silk* more than adequately measures up. It's a decided improvement on 1-2-3 release 1A, delivering goal seeking; time-series and allocation models; eye-catching graphics; text search and replace; and an easy, fill-in-the-blanks approach to a host of otherwise bothersome tasks. Woven into the product are 1-2-3 release 2's password protection, label-handling, and macro command features; and special functions, from path support to linear regression. Switching to *Silk* entails little sacrifice of power—but may require that you break a few old habits.

Silk's rough spots include an abbreviated array of data base commands. Although data management in 1-2-3 is perfunctory at best, *Silk* treats that function even more casually. The program supports data sort, table, and distribution commands but omits query commands that search and extract data base information. In addition, while *Silk* works like 1-2-3, it does not offer seamless file compatibility with that standard. Thanks to a file translation facility, *Silk* can read both .WKS and .WK1 files. Formulas and data move across smoothly, but 1-2-3 macros can't run without editing. Curiously, *Silk* writes imported .WK1 files back as .WKS files. The

Executive Summary

Silk

Spreadsheet software

Silk works like 1-2-3 release 2 but doesn't clone the look. Time-series, goal-seeking, and allocation models—along with a transcript feature, solid graphics, and a helpful reliance on forms—add to its appeal. *Silk* lacks some data management commands and won't accept 1-2-3 macros without modification. Navigating menus may require modest retraining.

Capacity	Good
Speed/performance	Good
Data analysis	Excellent
1-2-3 compatibility	Fair
Programmability	Excellent
Presentation capabilities	Excellent
Overall value	Good

program also reads and writes DIF files.

Silk sprawls across the usual 256 columns but does not extend beyond 1-2-3 release 1A's 2048 rows. The program consumes 512K of RAM—twice 1-2-3's appetite for memory. This higher minimum obviously means smaller worksheets in a 640K system. Fortunately, *Silk* supports the Lotus/Intel/Microsoft expanded memory specification (EMS) to good effect. Where 1-2-3 tends to be finicky about which cells live in expanded memory, *Silk* can place the entire worksheet in EMS RAM. The package supports the 8087/80287 numeric coprocessor. A hard disk is useful; in fact, for the program's transcript feature (which saves your every keystroke), it's mandatory.

Daybreak packed its program with features, and regrettably, that meant packing *Silk*'s three command lines with verbiage. The crowded horizontal menus, parked at the bottom of the screen, squeeze in such commands as Calendar and Validate. The order has also been scrambled; for openers, Range now precedes Worksheet. To the program's credit, a top line displays the command sequence as it is built.

Along the way, expect to encounter other subtle differences from 1-2-3. In *Silk*, the @ symbol doesn't announce formulas, but all label entries require an apostrophe. The slash key calls up menus and first letters invoke selections, but the <Space> bar and <Backspace>—not cursor keys—propel you through the menus.

You can bypass issuing lengthy skeins of commands by simply completing forms for options such as printing, graphing, creating macros, sorting data, setting

The screenshot shows the 'Define Field Schema' dialog box in the Silk program. The dialog has a title bar 'Define Field Schema' and a timestamp '04/06/87 10:45 PM'. It contains a list of fields to be defined, with 'Field: 5 of 5' currently selected. The fields are:

Field	Field Name	Data Type	Length	Decimal	Format	Required	Formula	Prompt	Option	Validate	Default
1	SALES	Numeric	11	2	999999999.99	No					
2	EXPENSES	Numeric	11	2	999999999.99	No					
3	GROSS	Numeric	11	2	999999999.99	No					
4	TAXES	Numeric	11	2	999999999.99	No					

Below the dialog box, a sample worksheet is visible, titled 'Sample Worksheet #6 - T'. It shows a table with columns A, B, and C, and rows 1 through 20. The data is as follows:

	A	B	C
H1	Data\Time	Jan/87	Feb/87
H2			
F3	SALES	label	5,923.00
F4	EXPENSES	(100.00)	3,921.00
F5	GROSS	100.00	2,002.00
F6	TAXES	16.50	330.33
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

At the bottom of the screen, a prompt message is displayed: 'Define prompt message to appear on message line'.

You can build a time-series table via a *Silk* form. The program automatically provides header and footer notations outside the spreadsheet border.

global defaults, and naming ranges. The real benefit of these forms is that you can store and later recall them.

The forms demonstrate Daybreak's desire to leave as little as possible to guesswork, an attitude reflected in the entire package. *Silk* includes comprehensive documentation and a fine on-line tutorial. On-line help grabs only the right half of the screen, sparing you the need to bounce between worksheet and help screen. A concise definition accompanies every menu selection, and an Appendix option supplies still more assistance. A 'CIRC' prompt flags circular references, and formula error messages give a written inkling of what's gone awry (where 1-2-3 merely beeps).

Silk supports a maximum cell length of 4000 characters. In Page

Edit mode, a pop-up window displays the contents of a cell—a handy shortcut to editing especially long entries. Although *Silk* notably lacks a Range Justify command to convert a long cell entry into a column of labels, the Data Parse command is a satisfactory alternative. Using the Worksheet Settings form, you can define a currency conversion rate and then automatically insert that rate in a spreadsheet.

Silk's first-rate keystroke-logging capability enables you to play back a session keystroke for keystroke. With keystroke logging toggled on, *Silk* creates a disk-based transcript of the current session. This essentially serves as *Silk*'s undo command; by replaying logged-keystroke files, you can recover lost or damaged files. And if that's not sufficient to document your models, formulas also include room for commentary.

Silk's macro language strongly resembles 1-2-3's—with a few notable exceptions. A Run command permits you to execute other applications or batch files from within *Silk*. You can also execute macros in point-and-shoot fashion, using a two-key combination. Better yet, a learn mode enables you to transform a previous keyboard sequence into a macro.

Silk embraces a host of worthwhile analytical utilities. A goal-seeking capability effectively mimics 1-2-3 add-ons like Enfin's *Goal Solutions* (see *From the Software Shelf*, PCW, April 1987). Goal seeking, activated from the command line, is straightforward and can be an enormous time-saver in break-even calculations. As in *Goal Solutions*, you complete a goal-seeking form by entering the target value, target cell, and variable cell information. Unlike Enfin's product, *Silk* cannot solve for multiple goals.

Silk's time-series facility can help you quickly and easily prepare data tables for financial projections. (Time-series tables consist of columns of time periods and rows of data categories.) *Silk*'s built-in validation techniques make such tables ideal for data entry tasks. Additionally, the program's Data Allocate command—a third unique function—distributes fractions of a single value in proportional amounts and can, for example, assist in divvying up a profit-sharing pool.

Silk provides a text search and replace feature that works equally well on a specified range or throughout the entire spreadsheet. The program's horizontal and vertical Range Insert and Range Delete capabilities are just as clever.

Date functions are handled a bit more nimbly in *Silk* than in 1-2-3, including a Data Fill Date command and a beginning- or end-of-period option.

Silk duplicates the 1-2-3 chart parade and adds several graph types: mixed, exploded pie, horizontal bar, and high-low-close. You can even specify a series of graph footnotes in the chart definition form. The list of graphics adapters and printers supported is brief: IBM's MDA, CGA, and EGA; the Hercules Graphics card; and IBM and Epson printers and HP plotters. If you've got a more exotic printer, *Silk* may not be able to extract the best from it. The Print form does, however, contain a background processing option, which creates a separate print file—and lets you get back to business while your handiwork is printing.

Silk essentially provides basic 1-2-3 functionality, even if it isn't as slick as the Lotus standard-bearer. But its impressive set of integrated bells and whistles, reasonable price, and lack of copy protection give spreadsheet buyers an attractive alternative to 1-2-3. ●

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Silk
Daybreak Technologies
2271 205th St.
Torrance, CA 90501
213/212-3030
List price: \$298
Requirements: 512K, two
disk drives (hard disk
recommended), DOS 2.00 or
later version
Not copy protected

Perfection According to Plan?

*Having made its mark
in word processing,*

WordPerfect

now seeks to repeat

the feat with

a spreadsheet.

STEPHEN A. BLUMENTHAL



Contrary to what you may have heard, it's not enough to fight the good fight. To unseat the champ, you've got to be decisively better. Bonecrusher Smith had to melt Mike Tyson, not simply knock a few dents in the man of steel. Pity the poor vendors of spreadsheet software, who confront a similar challenge. Even if your spreadsheet is as good as 1-2-3—as *PlanPerfect* from WordPerfect Corporation is—how can you get people to buy it?

To be heard above the competitive din, WordPerfect had to substantially improve on history's most successful piece of software. And *PlanPerfect* certainly is loaded: Its spreadsheet, data manager, and integrated graphics pack an analytical punch equivalent to that of Lotus's champ. *PlanPerfect* even performs some operations more smoothly and simply. But the price of that functionality is sluggishness and an interface only a WordPerfect user could love.

PlanPerfect is not a 1-2-3 clone, but it's close enough that switching shouldn't prove much of a strain for 1-2-3 users. True, *PlanPerfect* formulas don't begin with the @ sign, and the jargon varies; 1-2-3's Protect is *PlanPerfect*'s Lock, for instance.

PlanPerfect underscores WordPerfect's infatuation with function keys. The program's bottom-of-the-screen command lines materialize only when the spreadsheet enters one of its 40—count 'em—modes, which are triggered by a function key or function key combination. Some modes yield full-

screen menus (good for setting page formats, defining printing and graphics defaults, and the like).

PlanPerfect's specs are consistent with the industry norm—which is to say, gigantic. Thanks to virtual memory techniques, you can plant data in all 8192 rows and 256 columns—although this results in ponderous disk reads. Data will spill over to disk if the worksheet does not fit into 640K; if you had the foresight to plug in an expanded memory board, *PlanPerfect* will use up to 8MB more before dumping material to disk. The program's timed backup feature saves your work periodically.

Corporate planners may flock to *PlanPerfect* merely for its dueling spreadsheets. You can split the screen into windows and view two worksheets simultaneously. Moving between windows or copying information from one to the other is a matter of a few keystrokes. *PlanPerfect* can also link spreadsheets, temporarily or in perpetuity; links can include values and formulas or values alone. You can hide the contents of a cell (or a column or row) from prying eyes and assign passwords to files.

Among a host of nice touches is a pop-up window that lists and defines all program functions. The program's extensive financial and mathematical formulas essentially replicate 1-2-3's; they include such esoterica as single and multiple linear regression analysis—good for showing the effect of increasing advertising expenditures on product sales, for example.

A number of operations that require macros in 1-2-3 are built into *PlanPerfect*—functions like automatic cursor advance down a

column or across a row. Macros can be saved either in the worksheet or in a separate disk file. By saving frequently used macros to a macro file, you can import the entire batch into a new spreadsheet in one quick motion. Once you have defined macros and written them to disk, however, you can modify them only with the Macro Editor included in the *WordPerfect Library* package.

A learn mode eases macro definition, recording keystrokes in a macro as you type. A single cell accommodates 255 characters, and if you like your macros extra long, adjacent cells can hold the overflow. Macros can include nested subroutines. You can also write your own help screens for specific cells.

Some experienced managers can sense patterns developing in a worksheet, but most of us see patterns only when pictures are drawn. In general, *PlanPerfect*'s graphics are on a par with those of 1-2-3. Defining a graph is not a quick process, but it contrasts favorably with the whirling dervish dance required by *Symphony*. Once a graph is created, you cannot modify it except by changing the values of the underlying spreadsheet.

If your PC is equipped with a graphics board, you can generate bar, stacked bar, exploded pie, line, high-low, and scatter charts. If you're stuck in the character-based world, your choices are limited to bar and stacked bar charts,

created with text characters.

WordPerfect deserves censure for the documentation's sparse treatment of graph labeling. Using the Change option to modify graph titles, subtitles, labels, and legends must be done by trial and error.

In the graph module, a sizing window that operates much like WordPerfect's preview mode enables you to sneak a peek at a finished page of text and graphics. You can save graphs to disk as text files, which can be inserted into WordPerfect documents or exported to other word processors.

The program works hard to make a good visual impression, on both the screen and the printed page. It provides the usual left-center-right text alignment, and individual cells can be underlined, double underlined, or displayed in boldface or in various fonts.

PlanPerfect is packed with drivers for laser printers and plotters, and the WordPerfect Corporation will write you one if needed. The program's Set command supports sideways spreadsheet printing, and its print queueing function permits simultaneous printing and editing.

Whatever its merits as a spreadsheet, 1-2-3 by itself handles text in less than scintillating fashion. Release 1A cannot even generate a text response from an arithmetic formula, and release 2 is only slightly better. It should come as no surprise that PlanPerfect is significantly more adept in this category, allowing the use of text formulas.

With PlanPerfect, traditional word processing involves the creation of text editing windows. You highlight a block of cells in the usual way, and PlanPerfect moves to the edit mode. If the spreadsheet includes lengthy text passages that need extensive editing, you can drop the entire spreadsheet into WordPerfect and, after the word processing program has worked its magic, send the file back to PlanPerfect.

Data management functions likewise reflect WordPerfect's strong suit. With PlanPerfect you can search for any string of text or numbers, and the program is even fastidious enough to search for multiple occurrences of a specific formula. Sorts can be performed on up to ten key columns or rows (a laudable feature), while searches are confined to a single worksheet at a time.

PlanPerfect reads and writes files in ASCII, DIF, dBASE, and both 1-2-3 formats. If you'd like the program to read or write in another format, you can create one using your own row and column separators. PlanPerfect eschews a separate file import/export utility, handling those chores from within the program.

Despite WordPerfect's claims, however, importing and exporting 1-2-3 data is a bear. The company acknowledges that the programs' significant differences prevent information from flowing unimpeded between them. If a 1-2-3 worksheet cell contains a function that PlanPerfect does not support, only the text can be transferred. Similarly, 1-2-3 macros and statistical functions don't travel well.

If your models tend toward sprawl, you may find PlanPerfect a leaden companion. The more cells you load with data, the slower the program operates; weight it down on a dual-floppy system, and performance will diminish accordingly. Although a hard disk somewhat masks this sluggishness, it doesn't mend what ranks as an irritating virtual memory scheme. Unless you have expanded memory, PlanPerfect simply spends too much time retreating to disk. Among users reared on 1-2-3's

Executive Summary

PlanPerfect

Spreadsheet software

A feature-rich product with integrated graphics and data management capabilities, PlanPerfect supports multiple worksheets, worksheet linking, and a graphics preview mode and excels at text handling. What it doesn't have is speed or an easy-to-learn interface. Don't count on a painless interchange with 1-2-3.

Capacity	Excellent
Speed/performance	Poor
Data analysis	Excellent
1-2-3 compatibility	Poor
Programmability	Excellent
Presentation capabilities	Excellent
Overall value	Fair

catlike quickness, there'll be little tolerance for *PlanPerfect*'s sluggish recalculation times.

Program documentation is generally excellent, but it teaches solely by way of application examples. This pedantic approach can be irritating if all you want is a simple answer to a simple question.

If you eye features alone, *PlanPerfect* appears to be as useful a product as the champ. And if you're currently without a spreadsheet and you expect to traffic in both text and numbers, this is an acceptable place to start. But for industrial-strength number crunching, *PlanPerfect* doesn't deliver the punch to prompt most 1-2-3 users to dump their software stalwart. Were it more fleet of foot, *PlanPerfect* could be a contender. ●

Stephen A. Blumenthal is a PCW Contributing Editor and vice president of regulatory relations for the Securities Industry Association.

*PlanPerfect 3.0
WordPerfect Corp.
266 W. Center St.
Orem, UT 84057
801/227-4000*

*List price: \$395; network version \$100 for the first PC, each additional station \$150
Requirements: 256K (320K for bit-mapped graphics), two disk drives, DOS 2.00 or later version*

Not copy protected

Figuratively Speaking

*Words & Figures,
a 1-2-3-work-alike
from Lifetree,
adds a fourth component—
word processing—
to a very Lotus-like
spreadsheet.*

TOM BADGETT



If Lotus had it to do over again, the company might well come up with a program approximating Lifetree Software's *Words & Figures*. This program is, in many respects, what 1-2-3 should have been.

Although its worksheet files are a superset of 1-2-3 release 1A worksheets, *Words & Figures*' cadre of features places it nearer release 2. The center of attraction here, however, is *Words & Figures*' fully functional, if somewhat independent, word processor. For spreadsheet diehards who occasionally need on-the-spot word processing or for those who regularly prepare proposals that marry worksheet data and text, *Words & Figures* is worth a hard look.

Words & Figures' interface is about as sincere as flattery gets. The screen diverges from 1-2-3 in minor ways, but the differences are invariably improvements. *Words & Figures* moves the status display to the left and supplies a bit more detail for certain operations. The second-line prompts have grown a few new selections, among them Text and Audit. And *Words & Figures* adds a few touches absent from both major releases of 1-2-3, including PostScript support and the option to back up the old file before writing an active file to disk.

Most users are apt to find *Words & Figures* easier to use than 1-2-3, thanks to *Words & Figures*' expanded menu descriptions and pop-up lists of file names, worksheet status, and printer specifications. While menus can be invoked with the slash key, <Esc>

works as well—and may prove a more intuitive tack for novices. On the whole, documentation and on-line help are clearer and more accessible than in 1-2-3 release 1A.

Every copy of *Words & Figures* comes in light- and heavyweight versions. The former relies on overlays and fits machines with just 256K; the latter requires 512K or 640K but is entirely RAM resident. Like 1-2-3 release 2, *Words & Figures* uses the efficient sparse matrix worksheet storage technique.

Indeed, *Words & Figures* supports many of the features 1-2-3's release 2 takes on: paths, Lotus/Intel/Microsoft expanded memory, the 8087/80287 numeric coprocessor, Hercules and EGA graphics hardware, a cell width of 0, and hidden ranges (good for holding worksheet documentation). Maximum worksheet size is 256 columns by 9999 rows. *Words & Figures* does not, however, incorporate release 2's password support or its enhanced macro commands and financial functions. *Words & Figures* supports some 200 printers, including the Hewlett-Packard LaserJet, and offers HP 7475A plotter emulation.

Although the program can digest 1-2-3 release 1A worksheets, its expanded menus and three-step exit may require the tweaking of some release 1A macros. Fortunately, *Words & Figures* is smart enough to perform most macro fixes automatically. *Words & Figures* macros that don't depend on program-specific left-to-right menu movement operate satisfac-

torily in 1-2-3. More to the point, a brace of custom and third-party 1-2-3 macros and templates—including Macropac's *101 Macros for 1-2-3*—run just fine. *Words & Figures* did balk at a pair of programs sculpted for release 2: Turner Hall's *Note-It* and Lotus's *1-2-3 Report Writer*.

Words & Figures doesn't pretend to deliver blanket 1-2-3 compatibility, of course. Both major releases of 1-2-3 can read *Words & Figures* worksheets—which bear the .WKS extension—but you can't import its text files into 1-2-3, and *Words & Figures* can't read release 2's .WK1 files.

The *Words & Figures* word processor is integrated into the product, yet it retains a certain autonomy. (Those looking for traces of Lifetree's *Volkswriter* won't find any.) The brief access menu at start-up offers Spreadsheet and Text modes; toggling between the two environments never requires more than a two-key combination.

Driven by horizontal top-line menus, the *Words & Figures* editor supports basic word processing: on-screen boldfacing, underlining, and justification; search-and-replace; word wrap; automatic reformatting; block move, copy, and delete; and multiple-line headers and footers. As well implemented as those features are, however, they won't lure anyone from *WordPerfect*. And Lifetree loses points for a few arbitrary limitations. Right margins, for example, can't extend beyond 78 characters—clearly inadequate for many worksheets.

While the spreadsheet and text realms coexist, they retain most of their inherent characteristics—which is both good and bad. You

can insert all or a portion of an active worksheet into a *Words & Figures* text file, and the program's support of horizontal windows can hasten the merger. (The reverse does not hold: You can't drop text into a worksheet.) Worksheet data is not ASCII text but a separate spreadsheet range that becomes part of the document. The cursor can thus instantly become a cell pointer. Such worksheet data is line-oriented—a single worksheet cell claims a full line. You can't manipulate worksheet data as you would pure text.

Executive Summary

Words & Figures

Spreadsheet software

A spreadsheet with a word processor built in, Lifetree's *Words & Figures* enables you to work with live cells in a text document. Although the program offers pleasing graphics, an Audit mode, and a variety of handy pop-up menus, the emphasis is on enabling you to describe your calculations, not on supplying enhanced spreadsheet functions. Nothing comes for free; text-spreadsheet links gobble up RAM.

Capacity	<i>Excellent</i>
Speed/performance	<i>Fair</i>
Data analysis	<i>Good</i>
1-2-3 compatibility	<i>Excellent</i>
Programmability	<i>Good</i>
Presentation capabilities	<i>Good</i>
Overall value	<i>Good</i>

The good news is that worksheets embedded in text documents are linked to their parents; changes to common cells appear in both environments. When you save the text file, the worksheet to which it is linked tags along in that same file—no matter how vast the worksheet may be. The by-product is redundant data, but if worksheet links alone were stored, the embedded ranges would be corrupted once the linked worksheet was modified.

Text files pay a price for this intimacy. A one-line 57-byte *WordPerfect* text file claimed 3.2K in *Words & Figures*. A 37.5K 1-2-3 .PRN file, imported and saved in *WordPerfect*, required only 36.8K—one-third as much as that file consumed in *Words & Figures*. Apparently, *Words & Figures* assumes there's a linked worksheet any time a text file is saved and reserves space accordingly. And the larger the text file, the more room *Words & Figures* allocates for the accompanying spreadsheet.

Words & Figures function keys are not environment-sensitive. That is, some spreadsheet function keys go numb in the worksheet portion of a text document. Similarly, text-oriented function keys don't work in the spreadsheet chunk of a text document, and you can't access the document menu while you're in an embedded spreadsheet range. Neither can you include the text environment in *Words & Figures* macros, so you can forget about automatically merging form letters with a worksheet mailing list.

Words & Figures surrounds its spreadsheet and text functions with useful data management and graphics components. In *Words &*

Figures, you can sort on three keys (not two, as in 1-2-3), and an improved Data Query Extract operation elicits user feedback as it proceeds. *Words & Figures* queries can contain as many as 32 search criteria, and the program supports wild-card searches.

Words & Figures' graphics features improve slightly on those of 1-2-3, including release 1A's scatter plots; line and x-y graphs; and pie, bar, and stacked bar charts. The graph definition menus of the two programs are identical, aside from a unique Graph Name Show command, which displays all graph names in a pop-up window. *Words & Figures* also enables you to simultaneously display a worksheet on a monochrome monitor and the corresponding graph on a color monitor.

Words & Figures' Audit mode helps you trace errors and circular references, particularly in large worksheets. In Audit mode, *Words & Figures* displays a 0 in any cell that contains a value and a 1 in cells that hold a formula resulting in a value. A 'CIRC' message appears in any cell involved in a circular reference.

In speed tests, *Words & Figures* can't quite match 1-2-3. In both versions of *Words & Figures*, file loading took twice as long as in Lotus's standard. *Words & Figures* was also considerably slower at running several sample looping macros—3 minutes, 58 seconds compared to 1-2-3's 44 seconds.

Lifetree attributes the speed differential to repeated iterations during macros and sorts. On manual and automatic recalculation of large spreadsheets, however, *Words & Figures* holds its own.

Words & Figures will set you back some \$300 less than 1-2-3, and if you don't need the additional functions and macro commands of 1-2-3's release 2, Lifetree's program may be a solid choice. Although a vast aftermarket for Lotus products exists—particularly a growing stable of release 2 word processing add-ins—*Words & Figures*' word processor satisfies that need for word processing products. Its spreadsheet functions are significantly better than 1-2-3 release 1A's, but it's also true that 1A compatibility means adhering to yesterday's standard. Corporate users continue to flock to release 2.

Before you buy, then, weigh the value of integrated word processing against the cost of sacrificing compatibility with the way the world is going. ●

|| Tom Badgett is a consultant with Datapro Research in New Jersey.

|| *Words & Figures*
Lifetree Software, Inc.
411 Pacific St.
Monterey, CA 93940
408/373-4718
List price: \$195; available in 3½-inch format
Requirements: 256K, two disk drives, DOS 2.00 or later version
Not copy protected

G R A P H I C S



Andrew Shacht

FREELAN
PLUS

PUBLISHER'S PAINTBRUSH

AUTOSKETCH

ENERGRAPHICS

GENERIC CADD 2.0

Freelance Makes the Charts

*Freelance Plus adds
charting and
drawing features
to an already
successful product,
but the competition
is nipping at this
upgrade's heels.*

ERIC KNORR

Pick a chart, any chart...

Ashton-Tate's *Chart-Master* can whip one up with little trouble, *Microsoft Chart* extracts a bit more effort in exchange for more features, and the incurably lazy can always opt for graphics courtesy of 1-2-3—charts guaranteed to send even hard-core caffeine addicts off to dreamland. But if you're hooked on dressed-up data or if your job entails the occasional dog and pony show, you need a chart-editing package at least as powerful as Lotus's *Freelance Plus*.

Released two years ago by Graphic Communications (which was recently acquired by Lotus, as was Decision Resources by Ashton-Tate), *Freelance*'s biggest claim to fame was its rich set of symbols and editing features, which could enhance charts imported from 1-2-3 (and from *Freelance*'s sister program, *Graphwriter*). Its 1-2-3-like menu structure also appealed to spreadsheet users, and the program was one of the first PC business graphics packages to use a mouse effectively. All in all, it was an impressive debut.

Now that any graphics program worth its salt can pull in a .PIC (or even a .WK1) file, *Freelance* has been forced to learn some new tricks. Foremost among the changes, *Freelance Plus* is a charting as well as chart-editing program, able to draw graphs from



scratch using data entered at the keyboard, imported from a worksheet, or pulled from a *dBASE* file. Taking another step toward full-service graphics, *Freelance Plus* offers freehand drawing capability. No longer are you forced to construct even rough sketches out of arcs, lines, polygons, and the like.

Aside from Lotus's classy new documentation, *Freelance* aficionados will at first notice few changes in the *Plus* version. Setting up the program still requires switching to a separate program module, as does batch printing. Like the first version, the program drives the IBM Enhanced Graph-

ics Adapter (EGA), the LaserJet, and the Polaroid Palette, but the addition of only five device drivers (including a LaserJet Plus driver, for a slim total of 21 printers and plotters supported) seems meager for an upgrade.

A close look at the menu line atop *Freelance Plus*'s drawing area tells the real story. When you execute the new Chart option, a fill-in-the-blanks form takes over the screen, prompting you for a conventional array of chart data and text label input. Pulldown menus help you pick chart types, colors, line types, and other specifications; choosing the chart type conveniently changes the subsequent prompts to suit your selection. Default values are offered for type styles and the printed chart's

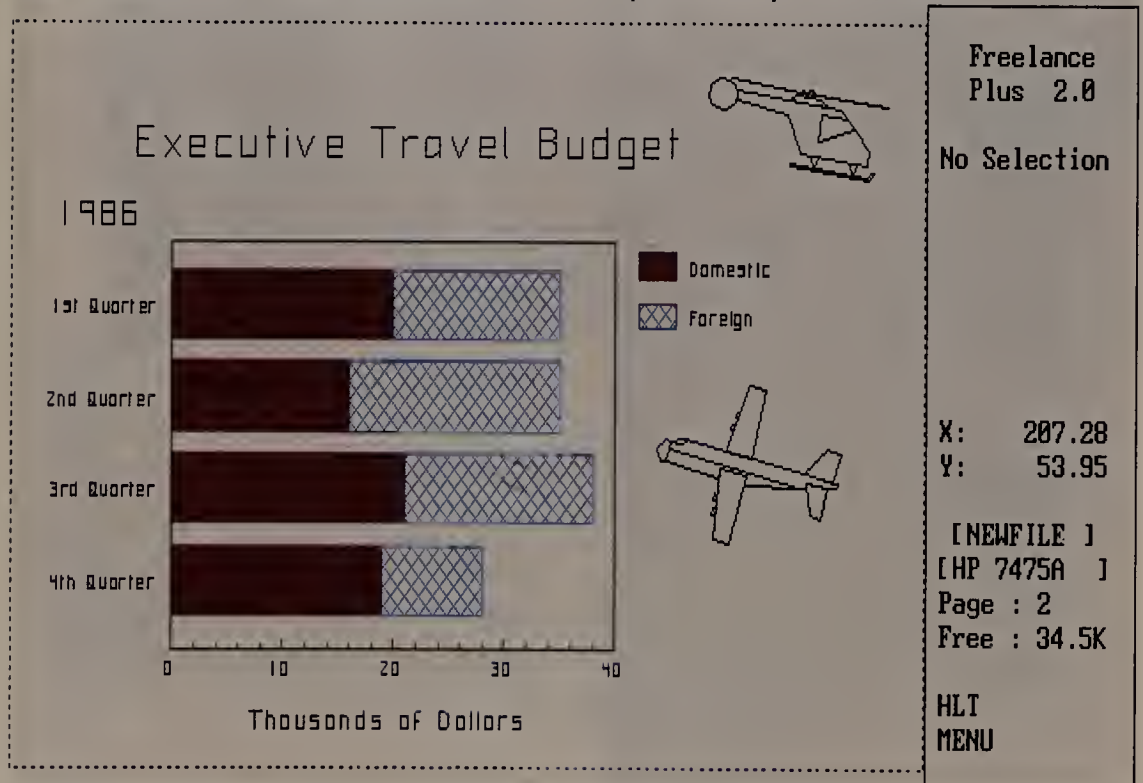
dimensions, and the program suggests an appropriate mix of colors and fill patterns for complex charts.

The assortment of chart types is pretty pedestrian. You can stack or cluster bars in horizontal or vertical formats and carve pies into as many as nine slices. Line charts and scatterplots are also supported, along with seven line styles in five line widths. You can apply up to 12 colors and 15 fill patterns to any chart and use nine iconlike markers as bullets or scatterplot data points. No high-low-close charts or three-dimensional effects are offered—a poor showing compared with the relatively obscure *Energraphics*.

Freelance Plus does a bit better with text charts, plugging entries from a form into a handy default layout, complete with bullets and 24 fonts (any of which can also be used for text labels). As with the previous version, you can enter text on the fly and move it or scale it easily. Also like its predecessor, *Freelance Plus* displays only a single, nondescript font, regardless of which font is selected for the final output.

The charting component's most useful feature is a template option that enables you to save chart formatting instructions without the data. If you need a standard graph to go with a regularly scheduled

Add Select Edit Move Rearrange View Options File Plot Chart Help Done
Copy, Replicate, Delete, Undelete, Turn, Flip, Priority, Join, Lock



Freelance Plus adds the ability to draw charts from scratch—and the symbol library is as useful as ever.

report, for example, you can simply import a 1-2-3 worksheet (or key in the numbers by hand) and plug the data into the template. Keep in mind, however, that none of the editing or drawing you do after the program draws the basic chart is saved with the template.

Although *Freelance Plus*'s drawing tools include a freehand mode, the program remains object oriented. You draw by selecting such entities as lines, polygons, circles, or symbols, then move or scale them to your heart's content. When you draw a freehand squiggle, the program perceives your creation as a collection of lines

that can be broken apart and reassembled. You can also disassemble symbols from the program's symbol libraries.

As with the original *Freelance*, the drawing area is divided into two full-screen pages; you flip between them using <PgUp> and <PgDn>. In practice, you use page one for the actual chart or drawing, while page two is generally used for loading symbol libraries. In the old version, viewing a different screen meant you had to wait for a screen redraw; now, thanks to full support of the 256K EGA (and compatible boards), pages appear instantly.

The *Plus* version's libraries now hold approximately 500 symbols, more than twice the number of the original version. Maps, industry icons, human forms, and geometric shapes are among the library themes, and you can add your own drawings as symbols. For \$145 to \$395, you can purchase additional compilations of detailed country, city, county, district, and statistical area maps.

Such extras are laudable, but despite its prestigious new owner, *Freelance Plus* hasn't quite kept pace with the times. Its charting options are welcome but hardly state of the art, and a number of other packages now offer a better selection of chart-editing features.

Among the program's competitors, *Graphstation* from Software Clearing House stands out as an all-purpose alternative, delivering faster screen drawing speed, a more convenient mouse-driven menu structure, a greater number of chart types, and the ability to manipulate spreadsheet data by scaling data points (see "One-Stop Business Graphics," *PCW*, September 1986).

The original *Freelance* built its reputation on sprucing up 1-2-3 charts. If Lotus had concentrated on beefing up *Freelance*'s already substantial editing features and had continued to use the company's flagship product for generating basic graphs, then *Freelance Plus* would be less vulnerable when compared with more powerful, less expensive charting products. As it stands, *Freelance Plus* is a capable graphics editor with a few ho-hum charting options thrown in. ●

Executive Summary

Freelance Plus

Business graphics program

Lotus has included charting and drawing features in the latest version of *Freelance Plus*, a program already renowned for its superior chart-editing features. A few new device drivers have been added, and *Freelance Plus* has twice as many symbols as *Freelance*. Because of its mediocre charting skills, however, the program suffers in comparison to other integrated graphics products.

Charting	Fair
Editing	Good
Text features	Good
Drawing	Good
Device support	Fair
Overall value	Good

Eric Knorr is a Senior Associate Editor for PC World.

Freelance Plus
Lotus Development Corp.
55 Cambridge Pkwy.
Cambridge, MA 02142
617/577-8500
List price: \$395
Requirements: 384K, two floppy disk drives, DOS 2.00 or later version
Not copy protected

The Publisher's Companion

Move over,
PC Paintbrush Plus.
Z-Soft's latest
neatly handles
full-page graphics,
from scanning and
editing an image to
exporting it to a
favorite desktop
publishing package.

RICHARD JANTZ



Ask desktop publishers, graphic designers, and commercial artists what their favorite paint program is, and they'll probably say Z-Soft's *PC Paintbrush Plus*. But if you ask the same gang how easy it is to edit a full-page, scanned image with this program, fuses begin to blow. Because you can manipulate only small sections at a time, flipping, rotating, reversing, or shrinking large images is like stitching together a patchwork quilt blindfolded.

To alleviate this crazy-quilt myopia, Z-Soft has introduced *Publisher's Paintbrush*. This latest addition to the *Paintbrush* line can use either expanded or extended memory to hold a full-page, 300-dots-per-inch (dpi) image (which occupies close to 1MB of RAM) and display it all at one time. In fact, the full-page image's size and resolution are limited only by the amount of memory in your system. These new memory-management skills are complemented by broader device support, a few new typographic twists, and an enriched set of zoom features to go with the bigger picture.

Like its predecessors, *Publisher's Paintbrush* features a Macintosh-like interface replete with pulldown menus, scroll bars, and icons for painting, drawing, and editing (see "Icon Painting," *PCW*, June 1985). Like *PC Paintbrush Plus*, *Publisher's Paintbrush* can drive a number of scanners (including the Canon IX-12, the AST TurboScanner, and the Hewlett-Packard ScanJet) and can import

bit-mapped images for almost unlimited manipulation. And because most page makeup programs—including *PageMaker*, *Ventura Publisher*, and *Harvard Professional Publisher*—have built-in links to the *Paintbrush* family, dropping your creations into a desktop-published document is relatively easy.

Expanding on its forerunners' typographic features, *Publisher's Paintbrush* offers a wider selection of vector fonts (described by geometric algorithms and therefore scalable) and bit-mapped fonts (described by a pixel-by-pixel pattern and therefore fixed in size), both of which are available in point sizes from 0 to over 350. And because desktop publishers cringe at the unsightly jaggies as-

Executive Summary

Publisher's Paintbrush

High-end paint program

Aimed at desktop publishers, *Publisher's Paintbrush* offers multiple zoom modes for easy editing of large bit-mapped images, but a PC AT with extended or expanded memory is a must for handling full-page 300-dpi graphics. The program generates limited typographics and supports popular scanners and laser printers, including the Apple LaserWriter.

Graphics editing tools	<i>Excellent</i>
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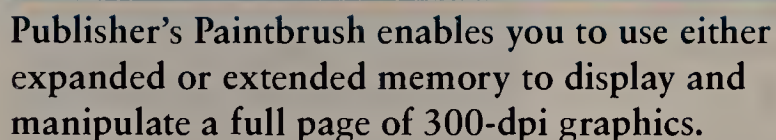
Text editing tools	<i>Good</i>
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Scanner control	<i>Excellent</i>
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Printer control	<i>Good</i>
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Overall value	<i>Excellent</i>
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The zoom features that coincide with high-resolution, full-page support are the program's most powerful new perks. You can choose a size factor for zooming out (2, 4, 8, or 16) and zooming in (4 or 8) on any full-page image. Most important, all the *Publisher's Paintbrush* menus, tools, and screen features are present and fully functional regardless of



Device support has always been a strong point with Z-Soft programs, and *Publisher's Paintbrush* is no exception. The list of drivers for all three *Paintbrush* programs grows continually; drivers for the AST TurboLaser, the Ricoh LP-4080 laser printer, and the Xerox 4020 color ink jet printer are among the most recent entries. The outstanding addition is the new PostScript driver, which enables you to print a *Paintbrush* file on a LaserWriter without first exporting it to a desktop publishing program. Unfortunately, the PostScript driver is about three times slower than its *Ventura* and *Page-Maker* counterparts.

269

RAM is close to essential. Adding text to a full-page, high-resolution image and loading parts of the image into the program's memory buffer for manipulation quickly exceeds the 1MB limit.

With this much RAM-hungry power, *Publisher's Paintbrush* is clearly more than a mere paint program. For many desktop publishers, the program will become the graphics component of the text-plus-graphics equation. Whether you need a custom-drawn logo or a flashy, full-page illustration, excellent device support and compatibility with the major desktop publishing packages should make *Publisher's Paintbrush* the de facto standard for getting the job done. ●

Richard Jantz, a desktop publishing consultant in Berkeley, California, is the author of Ventura Publisher for the IBM PC: Mastering Desktop Publishing (John Wiley & Sons, New York, 1987).

Publisher's Paintbrush
Z-Soft Corp.
1950 Spectrum Circle, Ste. A-495
Marietta, GA 30067
404/980-1950
List price: \$285
Requirements: 512K RAM, one disk drive, DOS 2.00 or later version, graphics board and display
Not copy protected

Catch as CAD Can

*Low-cost
CAD programs such as
AutoSketch and
Generic CADD
may save you a bundle,
but don't confuse them
with the
genuine article.*

STEVEN LORD



According to many mainframe CAD operators, even high-end PC CAD packages have barely enough speed and functionality for large-scale, detailed design work. What, then, of low-end CAD for the PC? Generic Software and Autodesk, two leading purveyors of inexpensive CAD software, both sell packages for under \$100. Can you really do anything useful with these near-giveaways?

The answer is a heavily qualified yes. *AutoSketch* and *Generic CADD 2.0* are adequate for drawing simple layouts and space-planning diagrams or for creating concept sketches, flowcharts, schematics, and organization charts. With lots of effort, you can coax either package into producing professional-quality drawings complete with text and multiple dimensions. Neither program, however, has the power or range of features that full-time designers and draftspeople require. These low-cost CAD entries are essentially drawing packages with some CAD tools thrown in.

AutoSketch can best be described as a scaled-down imitation of Evolution Computing's excellent *EasyCAD* (see "Easing Into CAD," PCW, December 1986). Like *EasyCAD*, *AutoSketch* is easy to learn, uses pulldown menus, and offers associative dimensioning, in which numeric dimensions change as you scale an entity—a powerful feature noticeably lacking in *AutoSketch*'s big brother, *AutoCAD*.

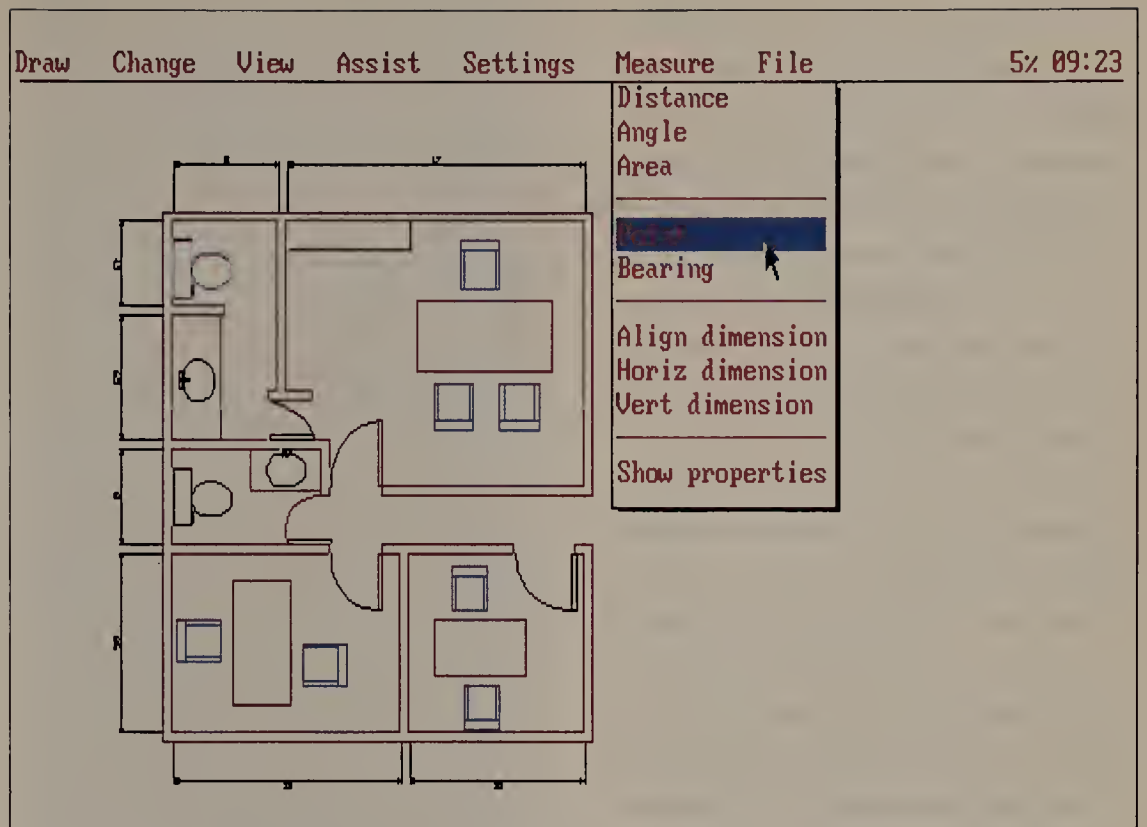
One of *AutoSketch*'s major shortcomings is its slow performance. On a dual floppy system, the program's slow and frequent disk access will soon drive you

back to paper and pencil. You need a numeric coprocessor and a hard disk (or a very large RAM disk) for the program to run at an acceptable speed. Oddly, Autodesk markets *AutoSketch* in two versions: a \$99.95 version with coprocessor support, and a \$79.95 version without.

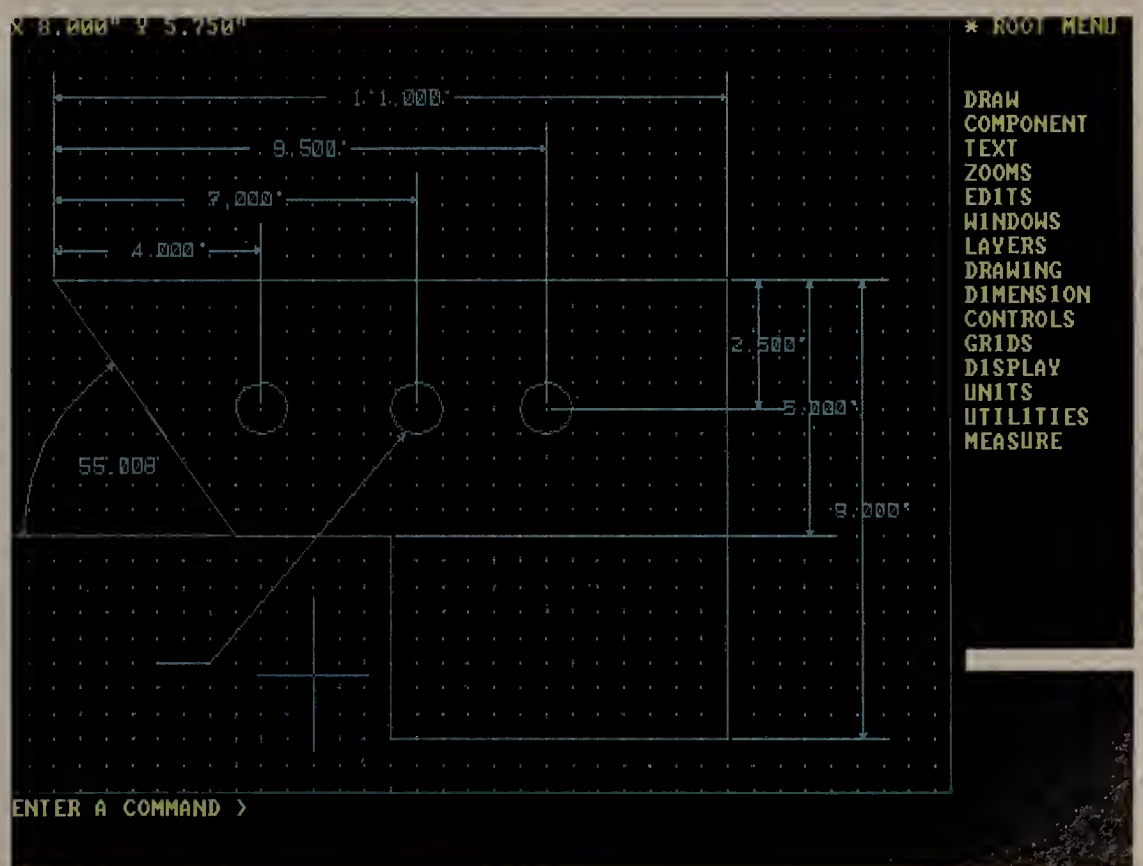
AutoSketch is easy to set up and learn. The manual includes a brief, effective tutorial, and the user interface is inviting to first-time users. A one-line menu bar across the top of the screen, used to summon the pulldown menus, frees up more drawing area than *AutoCAD*'s columnar menu format. Unfortunately, *AutoSketch* offers no way to customize its menus or build macro commands.

AutoSketch's construction tools include points, lines, rectangles, circles, arcs, and irregular polygons. You can create adjustable dot grids and set up the cursor so it snaps either between grid increments or between entities. And unlike many other packages, the program's full complement of zoom and pan commands works in conjunction with other drawing and editing commands. However, conspicuously absent are snap modifiers that force the cursor to find exact midpoints, intersections, and tangents.

For editing, *AutoSketch* enables you to erase, scale, rotate, stretch, copy, move, break, and mirror entities. You can assemble sets of entities into groups for simultaneous editing or break up sets as required. A useful undo feature speeds recovery from single-command mistakes. Missing from the editor are perpendiculars, parallels, offsets, array copying, cross-hatching, fillets, chamfers, trims, and extensions.



AutoSketch's pulldown menu system is easy to use but impossible to customize.



Generic CADD's user interface is a near ringer of *AutoCAD*'s. In this drawing of a simple bracket, the dimensions were created with Generic CADD's semiautomatic dimensioning facility.

The program's associative dimensioning is welcome, but *AutoSketch* supplies only linear dimensions in a single numeric format. Nonetheless, when you stretch one end of a dimensioned entity, the leader and dimension arrow extend accordingly, and the dimension numerals reflect the new distance. Designers will love this capability, but they'll miss many productivity features common to larger packages.

Generic CADD has more of the structure and feel of traditional CAD programs like *AutoCAD* and *VersaCAD*. It shares the tree-like menu structure and columnar menu format of these programs and operates noticeably faster than *AutoSketch*. In its basic \$99.95 configuration, the program also offers more features than its Autodesk equivalent. Its greatest advantage over *AutoSketch* is that it lets you customize menus and write macro commands to speed up repetitive operations.

However, Generic Software has omitted many useful features—including associative dimensioning. And to get a full set of snap, chamfering, filleting, and double-line functions, you need to purchase *Generic Drafting Enhancements I*, an add-on module that lists for \$49.95. Cross-hatching and solid fills come with *Generic Drafting Enhancements II*, which sells for the same price. For yet another \$50, the *Generic Auto-Dimensioning* module supplies you with dimensioning functions. Once you've been nickled and dimed to death, you might as well

have purchased a package like *Drafix I*, which is far more powerful right out of the box.

Generic CADD offers points, lines, arcs, circles, rectangles, regular polygons, and ellipses as construction elements. Absolute, relative, and polar coordinates in a floating-point data base with adjustable grids and cursor snaps enable you to build precise geometric shapes, but snap modifiers are included only with *Drafting Enhancements I*. Unfortunately, you can't use *Generic CADD*'s zoom and pan commands in conjunction with other drawing or editing commands, making some constructions difficult.

Editing features in the basic program resemble those in *AutoSketch*, except that *Generic CADD* lacks an undo command. The *Drafting Enhancements* packages greatly enrich the program's editing capabilities, but unfortunately, the fillet, chamfer, and corner-clean functions are awkward to use—drawbacks that Generic Software says will be remedied in the latest version (which should be on dealer shelves by the time you read this). Although the *Auto-Dimensioning* module offers more formatting flexibility than *AutoSketch*, Generic Software's entry is not associative—the leaders stretch and contract, but the measurements do not change accordingly. Erasing and rekeying the numbers is up to you.

Even with this drawback, *Generic CADD*'s faster screen response and its macro capabilities give it the edge over *AutoSketch*. *AutoSketch*'s user interface is more pleasing, but without macros and modifiable menus, you're stuck with what you get. In the long run, *AutoSketch*'s greatest advantage may be its ability to

Executive Summary

AutoSketch

Computer-aided design program

AutoSketch's main attraction is its engaging user interface and its associative dimensioning, which outclass those of some high-end packages. However, the program is slow, there's no way to modify its menus, and it supports only linear dimensions. The program best suits sketching, organization charts, and other light-duty applications.

Screen response	Poor
Drawing	Good
Editing	Good
Dimensioning	Fair
Customization	Fair
Overall value	Fair

Generic CADD

Computer-aided design program

An inexpensive program with high ambitions, *Generic CADD* offers a conventional CAD user interface and a clutch of add-ons that almost put it in the ballpark with genuine CAD programs. It delivers reasonable performance and a useful macro facility. Like *AutoSketch*, *Generic CADD* is not for serious design use.

Screen response	Good
Drawing	Good
Editing	Fair
Dimensioning	Fair
Customization	Good
Overall value	Good

move drawing files to and from *AutoCAD*, a capability for which Generic Software charges another \$50.

As their ads profess, you can produce real-life engineering or architectural drawings with either *AutoSketch* or *Generic CADD*. The difference between these products and programs such as *AutoCAD* lies in the time and effort you must invest to achieve results. If you're a heavy-duty user who must produce detailed drawings, you won't be satisfied with these low-end offerings, especially if you're familiar with the features offered by more expensive programs. ●

Steven Lord is a mechanical engineer and freelance writer living in Tewksbury, Massachusetts.

AutoSketch

Autodesk, Inc.

2320 Marinship Way

Sausalito, CA 94965

415/332-2344

List price: \$99.95, without
coprocessor support \$79.95

Requirements: 512K, two floppy
drives, graphics display adapter

Generic CADD 2.0

Generic Software, Inc.

8763 148th Ave. NE

Redmond, WA 98052

206/885-5307

List price: \$99.95, *Generic*

Drafting Enhancements I

\$49.95, *Generic Drafting*

Enhancements II \$49.95,

Generic AutoDimensioning

\$49.95, *AutoConvert* (for

AutoCAD .DXF files) \$49.95

Requirements: 384K, two floppy
drives, graphics display adapter

Charting Alternatives

*An all-purpose
graphics package
for charting and drawing,
EnerGraphics
runs the gamut—
from importing
1-2-3 worksheet files
to lighting up your
color monitor with
PC-based
slide shows.*

TJ BYERS



While big-league ad campaigns extol the virtues of blockbuster packages like *Freelance* and *Chart-Master*, a handful of lesser-known graphics programs have quietly carved comfortable niches for themselves. Chock-full of attractive charting and drawing features, Enertronics' *EnerGraphics* is a prime example of a quirky, appealing graphics program that enjoys a small but loyal following.

EnerGraphics' greatest strength is the depth and variety of its applications. The program's main feature is charting, but it also offers a CAD-like drawing module, symbol libraries, and a presentation function that produces slide shows on your PC's monitor. Guided by the program's abundant menus, you can create simple charts in a hurry, or you can explore a staggering assortment of text and graphics accoutrements—including impressive three-dimensional effects.

Conceived before pulldown menus or 1-2-3-like command lines were the rage, *EnerGraphics*' user interface relies heavily on the function keys, which are assigned different commands from menu to menu. The screens for creating and customizing charts use a fill-in-the-blanks approach, but the arrangement of the commands themselves often appears cluttered. *EnerGraphics* is not particularly intuitive for those who have

advanced needs—going beyond default options takes steadfast effort. And when you're finally well versed in the program's command set, you still need to traverse interim menus to reach desired functions.

In charting mode you can create and modify a generous selection of pie, bar, line, and text charts. Pie charts, for example, can be displayed in two or three dimensions, with up to 15 segments per chart in 15 individual colors and 8 slice patterns. To increase the impact of chart data, you can explode pies and offset the segments individually in 9 increments.

Bar charts offer an equally plentiful array of styles. You can stack bars, overlap them, or chart them in pairs for direct comparisons. You can also flip bar charts horizontally or—best of all—produce three-dimensional bar charts several layers deep for maximum impact. Tick marks, a must for three-dimensional charts, can be placed horizontally or vertically on bars using 8 patterns and 15 colors. And unlike many graphics packages, the program provides defaults for high/low and high/low/close charts as well as bar/line chart hybrids.

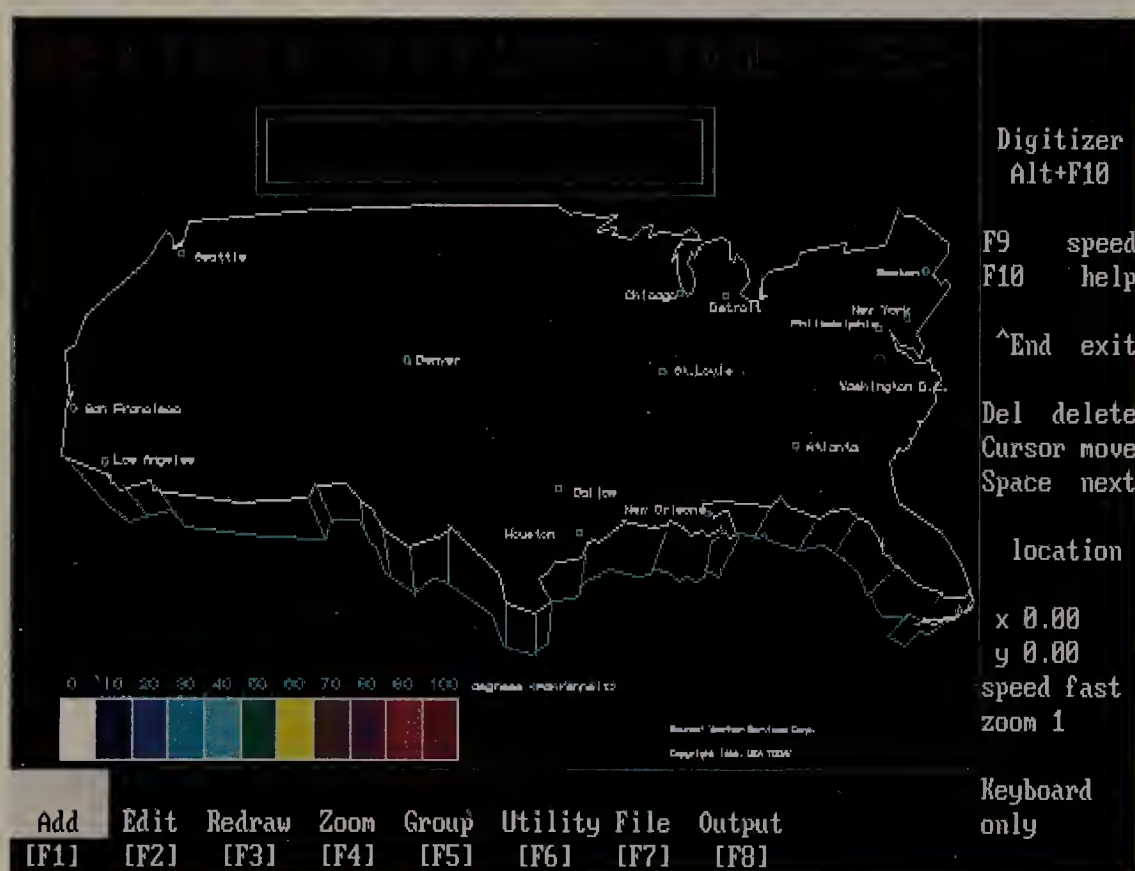
Line charts also accommodate three-dimensional effects, and you can use lines instead of bars for

high/low or high/low/close charts. Statisticians will be pleased to learn that *EnerGraphics* can plot linear and polynomial regressions as well as bell curves. The range of features stretches all the way to line charts with log scales for scientific applications.

EnerGraphics' flexibility also extends to text labels and text charts. The program offers eight typefaces that you can scale ad infinitum and enhance with a choice of 15 colors. You can also italicize text incrementally, from normal to near illegible, and slant the text baseline by degrees.

Beyond simply embellishing charts with borders or filling bars or pies with patterns, *EnerGraphics* includes 14 symbol libraries for dressing up ho-hum graphs. Many of the libraries center on specific themes, such as chemical industry equipment or electronic schematic symbols, but you can create and save an unlimited number of your own symbols with the program's drawing function. Using a box that stretches dynamically, you can size and position symbols and combine up to four charts of any type in one screen. The chart editor lets you change the size and color of any chart element, and you can even rotate text incrementally to make the letters appear three-dimensional.

The drawing portion of *EnerGraphics* supplies features on a par with many CAD programs. Drawing elements include lines, curves, arcs, and circles, and you can add text or fill objects with colors or patterns. The drawing



A feature-rich charting and drawing package, *EnerGraphics* lets you apply snazzy three-dimensional effects.

editor enables you to add, delete, rotate, or zoom in and out on objects and even create rudimentary three-dimensional models. It's as if Enertronics was bent on supplying not only business graphics users but also engineers and architects with the tools of their trade.

Unfortunately, a number of serious drawbacks accompany the surfeit of drawing features. To begin with, you can't use drawing tools in the charting portion of the program, and you can only mix drawings with a chart by first saving your creations as symbols, loading the desired chart, and

then importing the images. Worse is the drawing program's plodding pace, which slows intolerably if you use a mouse. The three-speed cursor control is snappier—if you can stand to draw with cursor keys. This poor performance is further compounded by a labyrinth of drawing-command menus.

Although you may be discouraged from dressing up your graphs with custom-drawn symbols, *EnerGraphics*' slide show functions can present your finished charts in the best light—especially if you have an Enhanced Graphics Adapter. To set up a show, you build a queue of images, decide which dissolves to use between frames, and establish the amount of time each image will appear on screen. *EnerGraphics*' slide shows may not match the versatility of *VCN Concorde's*, but they easily surpass those of *PC Storyboard*.

EnerGraphics supports a wide assortment of output devices, including the Polaroid Palette, the LaserJet, 8 color printers, and 19 plotters. On the software side, you can import and chart data from 1-2-3, *dBASE III Plus*, or any .DIF file. Even more interesting is a recently released RAM-resident Enertronics product dubbed *EnerMerge*, which enables you to insert *EnerGraphics* charts into virtually any word processing file.

The program's documentation is clean and to the point; using the Beginner's Guide, even a novice could produce a presentable chart on screen within an hour. But one oversight in the program itself could snag even savvy users, especially those with floppy-based PCs: *EnerGraphics* gives no warn-

ing of insufficient disk space. Graphics files are simply truncated when disk space runs out—even annihilated. Unless you keep a close eye on available disk space, you could lose several hours' work as the program methodically saves data to nonexistent files.

Such idiosyncrasies—as well as its maze of menus and abominably slow drawing—have helped keep *EnerGraphics* from becoming a front-runner. Nonetheless, this program offers enough defaults to make beginners look good as well as ample functions for graphics diehards. Even among the big guys, it's tough to find complete charting, editing, drawing, and slide show functions in a single package. With an overhaul of its user interface and a healthy boost in speed (planned for the next iteration), *EnerGraphics* could at last escape obscurity. ●

TJ Byers is a freelance writer and the author of *Inside the IBM AT* (McGraw-Hill, New York, 1986).

EnerGraphics
Enertronics Research
5 Station Plaza
1910 Pine St.
St. Louis, MO 63103
314/421-2771
List price: \$595, *EnerMerge*
\$199
Requirements: 384K, two floppy
disk drives (hard disk
recommended), DOS 2.00 or
later version

Executive Summary

EnerGraphics

Business graphics program

EnerGraphics combines charting, editing, slide show, and CAD-like drawing functions in a single package. The mix of features is unusually rich, but the program also offers plenty of default settings for beginning or casual users. Drawbacks include an overabundance of menus and a very slow drawing pace.

Charting	Excellent
Editing	Good
Text features	Good
Drawing	Fair
Device support	Good
Overall value	Good



Incorporated as Georgia Micro



Bulldog's Prices Are Going Down The Tube!

SOFTWARE

Camtastic	\$209
Camtastic Plus	349
Camtastic Plus II	69
Camtastic Plus III	99
Camtastic Plus IV	299
Camtastic Plus V	399
Camtastic Plus VI	99
Camtastic Plus VII	89
Camtastic Plus VIII	349
Camtastic Plus IX	89
Camtastic Plus X	339
Camtastic Plus XI	399
Camtastic Plus XII	369
Camtastic Plus XIII	319
Camtastic Plus XIV	109
Camtastic Plus XV	105
Camtastic Plus XVI	69
Camtastic Plus XVII	69
Camtastic Plus XVIII	279
Camtastic Plus XIX	239
Camtastic Plus XX	319
Camtastic Plus XXI	119
Camtastic Plus XXII	49
Camtastic Plus XXIII	59
Camtastic Plus XXIV	259
Camtastic Plus XXV	329
Camtastic Plus XXVI	149
Camtastic Plus XXVII	159
Camtastic Plus XXVIII	99
Camtastic Plus XXIX	259
Camtastic Plus XXX	145
Camtastic Plus XXXI	145
Camtastic Plus XXXII	259
Camtastic Plus XXXIII	349
Camtastic Plus XXXIV	99
Camtastic Plus XXXV	675
Camtastic Plus XXXVI	59
Camtastic Plus XXXVII	269
Camtastic Plus XXXVIII	49
Camtastic Plus XXXIX	439
Camtastic Plus XL	89
Camtastic Plus XLI	59
Camtastic Plus XLII	575
Camtastic Plus XLIII	149
Camtastic Plus XLIV	59
Camtastic Plus XLV	205
Camtastic Plus XLVI	59
Camtastic Plus XLVII	249
Camtastic Plus XLVIII	279
Camtastic Plus XLIX	249

HARD DRIVES

Seagate 10mb w/contr. ST213	\$325
Seagate 20mb w/contr. ST225	359
Seagate 30mb w/contr. ST238	425
Seagate 20 mb for AT ST4026	495
Seagate 30 mb for AT ST4038	539
Seagate 40 mb for AT ST4051	695
Seagate 40 mb for AT ST251	595
Seagate 80 mb for AT ST4096	949
IOMEGA BERNOULLI	
10 mb w/card	1065
10 + 10 w/card	1495
20 + 20 w/card	1950
BERNOULLI PLUS	3495
SYSGEN Durapack single	995
dual ext./int.	1850/1595
Mountain 20 mb drive card	649
Western Digi. 30 mb drive card	649
Western Digi. 20 mb drive card	625
Plus Hard Card 40	859
Plus Hard Card 20	625
Priam 60 mb AT	869
Priam 45 mb AT	685

MODEMS

Everex 1200/2400	109/225
Hayes 1200B/1200	315/345
Hayes 2400 int./ext.	479/539
US Robotics 2400 direct internal	189
Ventel Half Card 1200	
w/Crosstalk	259
Ventel Half Card 2400	
w/Crosstalk	369
Ventel 1200 Plus	239
Ventel 2400 Plus	369

MONITORS

ANDEK	
310-A	149
Color 600S	359
Color 722	495
PRINCETON	
MAX12	159
HX12	419
HX12E	495
TAXAN	
T124 Amber	109
840	799
720	349
635	450
650	519
NEC Multisync	575

PRINTERS

EPSON

LX 86 120 CPS, 16 NLQ	\$199
FX 86E 200 CPS, 40 NLQ	329
FX 286E 200 CPS, 40 NLQ	439
LQ 800 180 CPS, 60 NLQ	439
LQ 1000 180 CPS, 60 NLQ	619
LQ 2500 324 CPS, 108 NLQ	879
EX 800 300 CPS, 60 NLQ	389
EX 1000	509

OKIDATA

182 120 CPS	229
192 Plus 200 CPS	339
193 Plus 200 CPS	535
292 Plus 200 CPS, 100 NLQ	549
293 Plus 200 CPS, 100 NLQ	669
294 Plus 400 CPS	1095
Laser Line 6	1599

TOSHIBA

321 SL 180 CPS, 60 NLQ	525
351 II 300 CPS, 100 NLQ	949
341 180 CPS, 72 NLQ	689
351 Color 240 CPS, 100 NLQ	1150

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w/Pagemate III	
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F I N A N C E



ANDREW TOBIAS'
MANAGING YOUR MONEY 3.0

QUICKEN

THE EQUALIZER

TURBOTAX

Making Money Manageable

*If you produced
software that
garnered countless
compliments from users,
what would you do
for an encore?
You'd make it better,
of course.*

LESLIE LAUDERDALE



Like the IRS and the Grim Reaper, some things are inescapable. Without regularly plowing through reams of records—to balance accounts, track investments, and keep bill collectors at bay—you can't survive in today's paper-happy society. But sometimes it takes the fortitude of a saint to sit down and attack those routine home accounting and budgeting tasks.

Although personal finance packages such as *Andrew Tobias' Managing Your Money* from MECA and *Quicken* from Intuit won't eliminate the paper chase, they may lessen the drudgery. Once you set these programs up, paying regular bills like the mortgage is a snap, and you can balance your accounts more quickly and accurately than by hand.

Besides saving time, home finance software can give you a better perspective on your financial prospects. Using *Managing Your Money's* sophisticated budgeting, investment-tracking, and tax-planning capabilities, for example, you can analyze your net worth and create "what if" scenarios. With *Turbo-Tax*, ChipSoft's popular tax package, you can tinker with the numbers until you arrive at a solution that satisfies both the IRS and your conscience. In both cases you'll be spared the tedium of double-checking the math.

Some day, most of us will perform routine financial transactions via modem, just as we now use automatic teller machines for banking. Today's home finance software reflects this on-line trend, although the capabilities are quite specific and limited. Using *The Equalizer*, for example, you can place orders to buy or sell securities through your account with discount broker Charles Schwab.

Likewise, with *Managing Your Money*'s new home banking feature, you can pay bills through your accounts at Chase Manhattan Bank. In the future, sophisticated on-line functions will make it even easier for users to perform budgeting and accounting tasks quickly and accurately in the comfort of their own homes.

In the realm of personal finance programs, *Managing Your Money* comes closer than any other product to being an all-purpose budgeting workhorse. Like its previous incarnation (see "Andrew Tobias: Right on the Money," PCW, October 1986), *Managing Your Money* version 3.0 offers a host of features and a series of witty help screens that'll keep you glued to your PC for hours. Although the program hasn't been completely overhauled, each section—Reminder Pad, Budget and

Checkbook, Income Tax Estimator, Insurance Planner, Financial Calculator, Portfolio Manager, Net Worth, and Card File—has been bolstered, expanded, or finely tuned.

Among the small but useful improvements are a pop-up notepad, new <Alt>-key commands that save you from plowing through menus, and a mini hypertext function that leads you from one name to another in the Card File. *Managing Your Money*'s more flamboyant additions include the new on-line home banking function and tax planning through 1988. If you have a previous version of *Managing Your Money*, you can buy the upgrade for \$49.95; the list price is \$199.95.

The guts and glory of any home financial package is its ability to deal with nitty-gritty home accounting chores—writing checks, reconciling statements, and setting

up budgets. A champion in this category, *Managing Your Money* offers budget categories that you can add to or change, as well as the ability to sort transactions by check number, date, or payee. And although *Managing Your Money* doesn't pretend to be a full-service business accounting system, its accounts payable and receivable functions are more than adequate for most home-based businesses.

A much-ballyhooed addition to the Budget and Checkbook module is the on-line banking capability. If you have a 300- or 1200-bps modem and an account with Chase Manhattan Bank, you can perform transactions via Spectrum, Chase's home banking service. Services are limited to setting up bill payments, funding transfers between accounts, and obtaining your current account balance.

Once you've established an account with Spectrum, you can put current checkbook payees on line using the familiar Budgeting and Checking forms, save the entries, and send the payee data to Spectrum for verification, which takes five business days. Then you can debit your Chase accounts to your heart's content. If you write more than 25 checks per month, home banking may well save you time and money. Toll-free lines are available for transactions, and of course, you'll save 22 cents for every check-bearing envelope you'd otherwise mail. Spectrum's monthly use fee is a mere \$5. The home banking function is currently available only through Chase Manhattan, but MECA expects additional banks to join the ranks in the near future.

Because tax planning is a year-round job, home accountants will appreciate *Managing Your*

MYM * BUDGET AND CHECKBOOK/Convert to Spectrum Payee * 9:55:16a

Payee: Micro World

Street: 263 Chip Lane

City: Berkeley State: CA Zip: 94702

Memo: PCs etc.

Your account #: 990-006620-85129 Merchant tel. #: 843-2971

Name account is in: Abigail Hart Payee mnemonic: MW

F1 - Add this as a new Spectrum Payee

F2 - This is an existing Spectrum Payee

F9 - Back up without converting F10 - Return to MINI MENU

Press ESCape for Help

Using *Managing Your Money* to convert a checking account payee to a Chase Manhattan Bank payee, you fill out this screen, save it, and send the information to the bank's Spectrum service for verification.

Money's inclusion of tax laws and tables for 1987 and 1988. MECA promotes the tax module as an "estimator," so use it to predict how much you're likely to pay. *Managing Your Money* doesn't incorporate the newest changes in the 1987 and 1988 tax brackets (presumably because the laws weren't final when the program was released), nor does it include the new provisions regarding capital gains or the phaseout of passive losses (losses related to certain tax shelters).

Still, the five-year tax-planning feature is sufficiently complete to show how income and investments might be affected in the years ahead. And unlike most tax programs, *Managing Your Money* lets you change its assumptions. At the Alter Tax Schedules screen

you can modify tax brackets and tax rates; at the Changing Things Congress Likes to Change screen you can alter such variables as the number of personal exemptions; the self-employment tax percentage; and the deductions for medical expenses, nonitemized contributions, and married couples with two incomes.

Available tax schedules include A, B, C, D, E, F, G, W, the Social Security Self-Employment Tax, the Alternative Minimum Tax, and the Employee Business Expenses tax forms, plus the beloved 1040. Based on your entries in all the schedules, *Managing Your Money* quickly and competently calculates your tax bracket and taxes due.

When the budget year draws to a close, most users will be pleased that version 3.0 allows you to postpone the Starting a New Year procedure. In previous versions, you couldn't enter data after the first of the year without reconciling the previous year's accounts. With version 3.0, you can enter new data (or adjust for errors) without closing out accounts from the previous year, but you can't reconcile the new year's accounts until the old data is stored away.

Like Achilles, *Managing Your Money* can't seem to shake one notable weakness: terrible customer support. In a marathon attempt to get through, I made 40 phone calls over a two-day period. The final score: Busy signal: 39, live voice: 1. MECA says the company will shortly install an answering service to record your questions; with any luck a support representative will get back to you

at a later date. For nonemergency cases, this service will help tremendously. Still, it's too bad MECA won't buckle down and support its customers better instead of just keeping a finger in the dike.

Although *Managing Your Money*'s documentation has been beefed up, it's still not comprehensive. The program is replete with excellent help screens that illustrate their points with clever examples. But why aren't these details in the manual?

Despite a few shortcomings, *Managing Your Money* is a treasure trove of financial planning capabilities. It performs real-life budgeting functions admirably and maintains records worthy of any accountant. A new version is due out in late fall; by then, perhaps MECA will take the hint and fortify its lackadaisical documentation and support. ●

Executive Summary

Andrew Tobias' Managing Your Money

Personal finance software

A host of small improvements in version 3.0 make this much-praised program even better. Major changes include a new on-line home banking capability and a tax-planning section that reflects most of the new tax laws.

Checking and budgeting	Excellent
Tax planning	Excellent
Portfolio management	Excellent
Reporting	Excellent
Graphing	Good
Overall value	Excellent

Leslie Lauderdale is a freelance writer and the author of *Home Accountant Plus: A Guide for IBM PC Users* (Reston Publishing, Reston, Virginia, 1985).

Andrew Tobias' *Managing Your Money* version 3.0
Micro Education Corporation of America (MECA)
285 Riverside Ave.
Westport, CT 06880
203/222-9087
List price: \$199.95
Requirements: 192K, one disk drive, DOS 2.00 or later version, 300- or 1200-bps modem (for use with home banking and auto-dialing)
Copy protected

Small Change Adds Up

Power isn't always the best solution.

If all you need from personal finance software is speedy check writing

and account balancing,

Quicken fills the bill.

JEFFREY ANGUS



Some tools, like the Swiss army knife, perform 1001 tasks tolerably well. Others, like a power saw, perform one task expertly. And then there are tools like my circa-1959 toaster that do one thing just well enough to justify their existence.

Quicken, a home checking and finance program from Intuit, is like my toaster: plain, reliable, easy to use, and finite in scope. Instead of competing with multipurpose packages like *Andrew Tobias' Managing Your Money*, *Quicken* tackles the number one financial chore in every household: managing a checking account.

Quicken stores data for as many as 12 separate checking accounts. Getting into the program is a matter of making a copy of the *Quicken* disk and typing Q at the DOS prompt. When you select the first menu item, Write Checks, the screen displays (appropriately enough) an electronic check.

You fill in the fields—payee, address, memo, and so on—by flicking the cursor around with the tab and cursor keys. When you enter the amount after the dollar sign, *Quicken* automatically spells it out on the line below—an ingratiating touch.

Better still is *Quicken's* knack for automatically posting disbursements to its electronic ledger as you write checks. Select Check Register from the program's main menu, and you can meander through the ledger and enter additional information on deposits, checking account charges, automatic teller transactions, interest, and other items just as you would

in your trusty checkbook. Of course, the program can't read your mind (or your checkbook), so you must remember to post checks written by hand. To its credit, *Quicken* will prompt you to complete entries before moving on to the next item. A simple macrolike command will also memorize fixed entries, such as rent, car payments, and the like, and allow you to recall them the next time you write checks.

Printing formfeed checks—the bane of professional and amateur accountants alike—is remarkably simple with *Quicken*. Once you've fed the checks into the printer, you direct *Quicken* to print a sample check. If you inform *Quicken* that the type rests too far above or below the lines on the check, the program asks by how many points (marked on the check's perforated strip) it should adjust printing. Once supplied with this information, *Quicken* repositions the check and prints another sample, which is often right on the money. Next you indicate the starting

Executive Summary

Quicken

Electronic checkbook program

Quicken is a simple program that handles basic check-writing and account-balancing functions with great ease. It's not powerful, but it's inexpensive and beats manual methods.

Check writing	Good
Account balancing	Good
Sorting	Fair
Printing	Good
Overall value	Good

check number, and the program takes it from there. For \$27.95, Intuit will provide 250 formfeed checks printed with your name and address and your bank's name, and will even throw in window envelopes.

Although *Quicken* is no *dBASE*, it performs some useful retrieval and sorting functions. These can be helpful if, for example, you need to generate a list of all medical expenses for a given period. Select Search and List from the main menu, and *Quicken* pops a search request form onto the screen. You can request a list sorted by transaction, date, memo, and time period and filter the list by exact words or keywords. For example, typing *auto* retrieves transactions that match that word exactly; if you type *..auto..*, however, *Quicken* lists transactions containing both 'Autohaus Repair Shop' and 'Auto Care Clinic'. When *Quicken* generates a list, it calculates the total payments, deposits, and net balance for that list.

Quicken's account-balancing function is the program's weakest and most tedious module, perhaps because it too closely mimics its manual inspiration. When you receive your bank statement, you must plow through *Quicken's* check register item by item, marking transactions already processed by the bank. Once that's done, you supply the program with the bank's ending balance. *Quicken* churns through the numbers and either congratulates you on your bookkeeping skills or notes that

CHECK REGISTER									
Date	Num	Transaction	Payment		Clr	Deposit		Balance	
		Beginning							
6/18 1987		Balance Forward memo: checking account			X	2,203	00	2,203	00
6/20 1987	4222	The Vivarium memo: pet spider	118	92				2,084	08
6/23 1987	4223	Stamp Collector's Club memo: yearly dues	25	00				2,059	08
6/23 1987	4224	Dr. Stanberg memo: Lily's cough	80	00				1,979	08
6/29 1987		Autoteller memo: spending money	40	00				1,939	08
INSTRUCTIONS									
* Fill in blanks. Press ← to move to next blank.									
* Press F10 to record entry.									
Press F1 for more help									

Quicken's check register is so uncomplicated, the generous pop-up help screens are almost unnecessary.

you and the bank are not seeing eye to eye. In the latter instance, *Quicken* suggests possible reasons for the discrepancy. If, on the other hand, you'd rather not quibble over a small difference, you can direct the program to reconcile your account according to the bank's figure.

As extra bait, Intuit offers a \$15 utility that converts *Quicken* data for analysis with *1-2-3* and *Symphony*. The company also sells *Tax Reform Analyzer*, a nifty set of templates for *1-2-3*, *Symphony*, *Multiplan*, and *SuperCalc* that helps you predict how changes in federal income tax law might affect your household's tax obligations for 1987 and 1988.

In short, *Quicken* is a meat-and-potatoes accounting program. If your financial setup is simple, stick to your manual system. If, on the other hand, you manage several straightforward personal

checking accounts and write more than 20 checks a month, *Quicken* could be well worth the modest investment. But it's a toaster, not a pocket knife. ●

Jeffrey Angus is the Seattle bureau chief for InfoWorld.

Quicken

Intuit

540 University Ave.

Palo Alto, CA 94301

415/322-0590

List price: \$49, *1-2-3* and *Symphony* export utility \$15, *Quicken Tax Reform Analyzer* \$29

Requirements: 192K, one disk drive, DOS 2.00 or later version

Not copy protected

Trading Among Equals

*There's no mercy
in securities trading.*

*But if you're game
to play the market,*

*The Equalizer
can help you
survive among the wolves.*

JAMES BUTTONWOOD



No one has had more success meeting independent investors' needs than discount broker Charles Schwab, whose instinct for serving customers is as primordial as a salmon's to swim upstream. Schwab's software brain-child is *The Equalizer*, a \$199 program that enables users to perform on-line trading via their Schwab & Company accounts; conduct market research; and track, analyze, and update securities.

Like most first releases, *The Equalizer* version 1.01 is far from perfect. Because it runs under the UCSD-p operating system (a runtime version is included), the program doesn't work on hard disks or with RAM-resident software, nor can it produce reports in ASCII or DIF format for transfer to other programs. To top it off, the program is copy protected, and it doesn't work with 80286 machines. In a surprising bit of oversight, none of this vital information appears in the documentation or on the product packaging. However, Schwab & Company plans to release an updated version of *The Equalizer* later this year that corrects many of the glitches.

The Equalizer has two sections: a Portfolio Accountant, for managing securities, and an Electronic Broker, whose Research and Trading modules are the program's forte. Once you enter the appropriate communications data—a local Tymnet phone number, a user ID, and a couple of passwords—you're ready to roll. From the Research module, you can download Dow Jones quotes (delayed 15

minutes) for up to five securities at once; you can also access Dow Jones News/Retrieval data bases or Standard & Poor's Market-Scope, a service that provides investment advice and information on thousands of companies.

Instead of downloading raw data—company earnings, stock dividends, growth rates—and applying fundamental or technical analysis, you can use *The Equalizer* to download company profile reports prepared by professional analysts at \$3.50 each plus communications charges. That way, you can develop an investment strategy based on a synthesis of opinions instead of relying on a single source.

Data entry is generally straightforward. To receive company reports, for example, you simply specify ticker symbols for up to two companies in the Research

Executive Summary

The Equalizer

Portfolio management and trading software

A boon for on-line trading through Schwab & Company, *The Equalizer* also provides worthwhile research and portfolio management capabilities. On the downside, the program doesn't work with 80286 machines, hard disks, or RAM-resident software.

Research	Good
Trading	Excellent
Portfolio management	Excellent
Reporting	Good
Overall value	Good

module; the program automatically dials Warner Computer Systems and downloads the information. If you don't remember the ticker symbols, the handy Symbols Guide included with *The Equalizer* will clue you in.

Placing an order—if you're so inclined—is a smooth and uncomplicated process. First you must establish a brokerage account with Schwab & Company, either using the form included with *The Equalizer* or in person at a Schwab office; then you request the on-line trading option. With an account number in hand you have access to the Schwab On-Line Trading System 24 hours a day. In the Trading module, you enter up to ten proposed stock, bond, option, or mutual fund purchases or sales on a clear-cut data entry screen. Then you press a key to connect toll-free with the Schwab system, and enter your trading password. If the order is illegal (say your account number was incorrectly entered), the program displays an error message. If the order is valid but looks fishy to the computer or to the registered representative overseeing the process, the program prompts you to confirm your action.

Once your order goes through, the 'Order executed' message appears. For further confirmation, a commission report is sent to you electronically the next day. After reading the report you can take advantage of *The Equalizer's* excellent integration to update your portfolios automatically with a

few keystrokes, as long as you've entered your on-line account number in the Portfolio Accountant. Inventory will be added or subtracted; cash positions and margin account status will similarly be adjusted. Your Schwab account will be debited for the cost of the securities and related commission charges.

The Portfolio Accountant—consisting of Alerts, Maintenance, Reporting, and Data Updating modules—is a useful management tool. From the Maintenance menu you can enter information on up to 250 securities in a maximum of 26 portfolios, post interest or dividends to the appropriate securities, and adjust your records to account for stock splits. Unfortunately, *The Equalizer* is somewhat inflexible; you can't store securities 251 and beyond on extra data disks. If you plan to track more than 250 securities, you'll need a different program.

Like most portfolio management programs, *The Equalizer* enables you to update the prices of securities automatically. It outperforms *Andrew Tobias' Managing the Market* by allowing you to perform such updates through Warner Computer Systems as well as Dow Jones News/Retrieval. Using the convenient manual updating feature, you can update selected securities to save communications charges.

The Equalizer's reporting features are worthy of any good portfolio manager. The program generates reports by portfolio, security, gain or loss, dividend income, and interest, and it can display all transactions involving an

exchange of cash. If you require an audit trail, the Security and Cash Transaction report provides details on every transaction made in one or all of your portfolios. To narrow the list, you specify a range of dates. In all cases you can print the report to the screen or send it directly to your printer. Fancy formatting is not the program's strong suit; the printed output is strictly no frills, but it does the job.

For spotting significant changes in securities prices, the Price Alert feature is indispensable. If the price of a given security surpasses the high or low limits you specified when adding the security to the Maintenance module, a special notice appears in the Reporting section, enabling you to take appropriate action without delay.

Three other reports useful for jogging your memory are available in the Alerts module. *The Equalizer* sorts your portfolios and presents a report on options about to expire, bonds about to mature, and securities about to go long-term (so that they're subject to favorable tax treatment). You can specify a range of dates or accept the program's defaults.

The Equalizer is easy to learn and use, and its lucid, well-designed user's guide is a welcome resource if you get stuck. Unfortunately, the manual lacks an index, so it's sometimes difficult to find information quickly. Still, you can always seek help through Schwab's technical support service, which is fast, courteous, and—best of all—toll free.

Added to *The Equalizer's* long list of useful features is up to \$168.50 worth of services: a free subscription to Dow Jones News/Retrieval and an hour's free use; a company profile report from Warner Computer Systems; and a one-month subscription to Standard & Poor's MarketScope and \$15 worth of access time.

If you're shopping primarily for a good portfolio manager, *The Equalizer* performs on a par with the best products in its price range—except for its dated lack of support for 80286 machines, hard disks, and RAM-resident software. And if you think on-line trading through Schwab will give you the market advantage you've always craved, *The Equalizer* is tailor-made for you. ●

James Buttonwood is an investment banker and part-time computer consultant in New York City.

The Equalizer
Charles Schwab & Co., Inc.
101 Montgomery St.
San Francisco, CA 94104
800/334-4455
List price: \$199
Requirements: IBM PC, XT, or any 100-percent compatible computer; 128K; one disk drive, Hayes, Novation, SSM, or Hayes-compatible modem
Copy protected

TurboTax: Many Happy Returns

*Tax preparation
is a loathsome task.*

*TurboTax
comes as close as a
program can to
making the process easy—
not to mention
more accurate.*

CHARLES RUNDGREN



Ostriches hide their heads in the sand; at tax time many overburdened citizens would like to follow their example. Fortunately, with *TurboTax* version 4.01 from ChipSoft, preparing a tax return is a less tedious and error-prone chore. A steal at \$65, *TurboTax* accurately calculates your taxes in mere seconds and provides first-rate forecasting and planning capabilities.

TurboTax is remarkably easy to set up, learn, and use. From the main menu, you can access 35 federal forms and worksheets, calculate the return, and print it. Most users will start with the on-screen equivalent of the 1040 form; from there, filling out supplemental schedules is easy. To get to Schedule C (Profit or Loss From Business or Profession), for example, you place the cursor on line 12 of the 1040 (business income or loss) and press <F5>. After you've completed the schedule, pressing <F5> again returns you to line 12, your point of departure.

Any changes you make to supplemental forms are automatically posted to the 1040. If you uncover a receipt for a business meal after completing the return, you'll be grateful the program is so well integrated. You simply enter the new data and then press a few keys to recalculate the return—a speedy process. If you use ChipSoft's state income tax returns package, pertinent data from the federal tax return will be posted automatically. And if you used a previous version of *TurboTax* to calculate your 1985 return, you can import relevant information (such as depreciation figures) into version 4.01 to save data entry time.

Handy pop-up features accessible with the slash key include a calculator and notepad, as well as a Tax Window that gives you a quick hit on your tax bill based on the data you've entered up to that point. And from any cell the pop-up Expand feature lets you fill out a supplemental schedule for the IRS or document how you arrived at the figure in that cell. If you enter \$625 on Schedule A's cash contributions line, for example, you can itemize the recipients of your generosity in the pop-up window—and not incidentally, create an electronic audit trail.

If you like to gauge how various loopholes affect the amount you fork over to the IRS, you can play “what if” using *TurboTax*'s Tax Alternatives worksheet. The data you entered on the 1040 form appears automatically in the first column of this worksheet. You can copy the data to any of three Alternative columns, changing individual line items and recalculating

the worksheet for each case to see how your income tax is affected. Married taxpayers might find it useful to explore the tax advantages of filing separate returns versus a joint return or measure the effects on their tax bill of adding money to IRAs.

For forecasting purposes, you can use the 1987 tax rates option from the main menu for use on data in Tax Alternatives worksheet; *TurboTax* calculates how much you would owe on your 1986 income according to 1987 rates and changes in the tax law. Or you can use your 1986 data as a starting point, adding changes anticipated in 1987—such as an increased interest deduction if you plan to buy a house. Most major changes in the tax law for 1987 are incorporated in this version of *TurboTax*. Still, for tax preparation most users will want to wait for the next version of the program. Scheduled for release in December, it is expected to include up-to-date information for 1987 returns.

Printing the two-page IRS-approved Form 1040 is *TurboTax*'s only weak spot. After you insert the 1040 into your printer, you are supposed to fiddle with it until the printer places a small dot slightly to the left of center in an alignment box on the form. But the odds are still good that the form won't be correctly aligned. Perhaps in recognition of this problem, *TurboTax* provides five pin-feed forms for multiple trials. Because the IRS accepts computer-generated facsimiles of forms other than the 1040, you can print supplemental forms on

blank paper, thereby avoiding the alignment problem.

The \$65 personal version of *TurboTax* is designed for individuals preparing their own returns. Professional tax practitioners can obtain a more powerful version of *TurboTax* for \$295 that features 55 tax schedules, client file management capabilities, and batch printing. Professional state return programs are \$195 each. If you like the program enough to buy it again the next year, ChipSoft's upgrade policy will make your day: Each subsequent year's update is available at half the list price.

Just about the only thing *TurboTax* can't do is print the money you'll need to settle your account with the IRS. Still, *TurboTax*'s many time-saving features will help get you through the yearly tax-return ordeal. ●

Charles Rundgren is a CPA and consultant in the Orange County, California, office of Deloitte Haskins & Sells, a Big Eight accounting firm.

Executive Summary

TurboTax

Tax preparation software

You can't ask for much more: *TurboTax* is fast, inexpensive, and virtually effortless to use. Excellent integration reduces data entry time, and planning and forecasting capabilities help clarify your options.

Tax return preparation	Excellent
Tax planning	Excellent
Calculation speed	Excellent
Printing	Good
Overall value	Excellent

TurboTax
ChipSoft, Inc.
4901 Morena Blvd. #801
San Diego, CA 92117
619/581-2233
List price: personal version for federal returns \$65, professional version \$295; state returns (AL, AZ, CA, CO, GA, IL, IN, KS, LA, MA, MD, MI, MN, MO, NC, NE, NJ, NY, OH, OK, OR, PA, SC, UT, VA, WI) personal version \$40, professional version \$195
Requirements: 256K, DOS 2.10 or later version
Not copy protected

A P P L I C A T I O N

D E V E L O P M E N T



Andrew Shachat

MAGIC PC: THE UN-LANGUAGE 2.36

The Language That Wasn't There

*Need to pull
an application*

out of your hat?

*With a little
sleight of programming,*

*Magic PC
will do just about
everything—
without a language.*

TOM SWAN



Aker's *Magic PC: The Un-Language* 2.36 is a sorcerer's apprentice for data management wizards. Because the program lets you concentrate on results rather than on step-by-step commands, writing applications is more like conjuring than programming.

Magic PC inhabits a special piece of turf on a field it shares with prototyping systems, application generators, and full-fledged data managers. The *dBASE III Plus* Assistant and *R:base System V*, which feature pulldown menus and integrated application generators, have begun to show users how to succeed at application development without really trying. But in general, application design is a demanding process (see "A Plus for dBASE III," *PCW*, October 1986, and "R:base: The Promise Expressed," *PCW*, February 1987).

Rather than generating program code like high-end data managers do, *Magic PC* produces a stand-alone file that its own run-time system understands. The program isn't a compiler—it's an application designer. *Magic PC* works like a graphics program: You shape the ends rather than worrying much about the means. And once the design is complete, *Magic PC* serves as the data base engine with which you manage the application.

Two distinguishing qualities set *Magic PC* apart: the absence of a programming language and the flexibility of Aker's pricing. For \$19.95 you receive a complete design module limited only by its 100-record capacity. That's a no-lose prototyping system—and maybe more. Qualified value-added resellers (VARs) can purchase not-for-resale copies of the

unlimited package for \$199 and run-time modules for \$95 each. (You must purchase one run-time system for each copy of your application sold.)

Magic PC is a self-contained world. The program's design module consists of data and program dictionaries, both of which live in a single file. The data dictionary encompasses file, field, and key definitions; the program dictionary contains applications. Keeping the entire show under one roof means that applications are quick and easy to create, implement, and maintain.

Applications themselves are constructed with *tasks*—the program's true building blocks. Tasks can be user-instigated (like data entry and query) or batch (reporting and form printing). Each task relies on a primary file and as many linked files as you need. Tasks can execute other tasks or other programs, exit to DOS, and import or export files. *dBASE* and *R:base* devotees need not relinquish a single existing application. It's no strain to set up a *Magic PC* task—which simply becomes a menu item—that reads and/or writes *R:base* and *dBASE* files in comma-delimited or straight ASCII format. If you'd prefer to skip file translation, you can use *Magic PC*'s DOS services to run Ashton-Tate or Microrim applications directly from the program itself.

Magic PC includes a full-screen editor, window design tools, and an *expression table*—a holding tank for program logic. Activating tasks is a matter of mixing and matching any of 13 predefined operations, including update field, begin link, end link, read file, and write file.

To design applications with *Magic PC*, you specify field names, lengths, and types—a process that doesn't differ markedly from that of any other data management system. Although learning *Magic PC*'s vast array of function-key commands took some time, I was eventually zooming (the program's lingo for stitching tasks together) from window to window.

The program's power becomes evident when you design tasks—reports and entry screens, for example. Instead of using a programming language, you fill in tables with specifications, field names, and expressions. From there, you add the task names to pop-up menus, and you're done. All this takes place in the same windows that users will see. To twist a phrase, what you see is what they get.

In addition, there's no restriction on the order in which you add fields, files, menus, and other elements. If you want to create all your tasks and then design pop-up menus, that's fine with *Magic PC*.

Designing entry screens is a snap. You begin by drawing a window and moving it around with the cursor keys until you're satisfied. Line and screen options enable you to display one record at a time or show multiple records, which can be scrolled within a window. You can place the window anywhere on screen, color it or paint it in inverse video, and display multiple windows simultaneously.

As you proceed, the Checker—a sort of magician's helper—tests for errors, such as missing key fields

or invalid expressions. Witnessing the Checker put a design through its paces is a delight. The Checker snared every error I purposely introduced.

As a relational data manager, *Magic PC* lets you completely control links between fields. You can specify one-to-many or many-to-many relations. This capability makes it possible to design invoices, customer orders, and other forms that require you to enter data on numerous lines.

For those who care about specs, *Magic PC* can handle 999 data files and keep 15 files open at a time. (Maximum file size is limited by DOS, not by the program.) The smallest possible record size is 5 bytes, the largest 2048 bytes. You must define at least 1 key per file

Executive Summary

Magic PC

Application generator

Magic PC, an application generator with full data management and graphics capabilities, delivers application design power without a language. While not quite as flexible as *dBASE*, the program's visual approach to task-creation is a major time-saver. Documentation is not up to the standards of the rest of the package, but *Magic PC*'s innovative pricing should increase its appeal.

Capacity	<i>Excellent</i>
Screen generation	<i>Excellent</i>
Relational capabilities	<i>Excellent</i>
Report writing	<i>Good</i>
Network support	<i>Good</i>
Documentation	<i>Fair</i>
Overall value	<i>Excellent</i>

and can define up to 24. Each key can have from one to ten segments, consisting of various parts of data base fields. Key sizes range from 1 to 250 bytes. A record can have from 1 to 2048 fields, provided it doesn't exceed maximum record size. Field types include 4- and 9-digit integer, floating point, 14-digit decimal, date, time, and alphanumeric.

Backstage, *Magic PC* leans on Softcraft's popular *Btrieve* for data storage and indexing. Because you place a good deal of faith in an application generator, it's reassuring to know that a time-tested package is working for you behind the scenes. *Magic PC* generates multiuser applications compatible with Novell's *Advanced Netware* and supports locking at the file and record levels. But the best news for LAN users is an unlimited license for network installations. That's right: no limit on the number of users and no extra fees.

Any application generator needs a good report generator, and *Magic PC* fills that bill nicely. You create printed reports with commands similar to those used to create on-line entry screens. Design windows permit you to view a report exactly as it will appear when printed. Unlike systems that lock you into a format for page numbers and titles, *Magic PC* almost frees you to do as you please with headers and footers.

That *almost* concerns the way *Magic PC* handles multiline fields. It's only when entering copious quantities of data that you realize *Magic PC* lacks word wrap. The program breaks each line at the

point it exceeds the character limit—a primitive approach, to say the least.

On the other hand, the program's ability to send reports to disk files or to the screen is a decided plus. To write reports to disk, you simply specify a file name; you can then edit the results with virtually any word processor. If you specify console output, reports appear neatly in a pop-up window, with pauses between screens. You might also use console output to preview a report's design before sending a file of 1000 mailing labels to the printer.

Unfortunately, *Magic PC*'s 440-page manual deserves only fair marks. There's certainly no chance it'll be mistaken for a primer on data base design. If you're relatively new to computing, you might be baffled by a passage like, "The R stands for Read Data Dictionary Field (versus a V for a temporary Virtual Field)." Systems analysts will know that data dictionary fields are those the system physically stores on disk, while virtual fields are created on the fly; *Magic PC*'s intended audience probably won't.

Despite those liabilities, the tutorial that consumes the first half of the manual is one of the best I've used. It guides you through a complete order-entry system, teaching you how to enter and sort data and explaining system design. You then redesign the same system from scratch, using data already stored on disk. Every instruction is cogent and exactly matches what you see on screen. And if you get stuck, you can refer to the completed design while you attempt to recreate it.

For some users, *Magic PC* won't replace a traditional data management package simply because the program, like any application gen-

erator, ultimately limits you to what it knows how to generate. On the other hand, *Magic PC* offers myriad possibilities, and it may very well enable you to create every facility and screen you need. If you want complete control over the appearance of your menus, you're out of luck. But when the crunch comes and you're battling a deadline of yesterday, you may savor those design decisions you don't have to make.

That kind of real-world assistance makes the \$20 admission price to see *Magic PC* do its tricks worthwhile—even if the demo version merely serves as a bargain prototyping system. My suspicion is that many data management professionals will find it to be much more; although the full system price isn't cheap, this program is a stellar performer. ●

Tom Swan is the author of several books on programming, including *Mastering Turbo Pascal* (1986) and *Pascal Programs for Database Management* (1984), published by Howard W. Sams (Indianapolis).

Magic PC: The Un-Language
2.36

Aker Corp.

18007 Skypark Circle Dr. #B2
Irvine, CA 92714

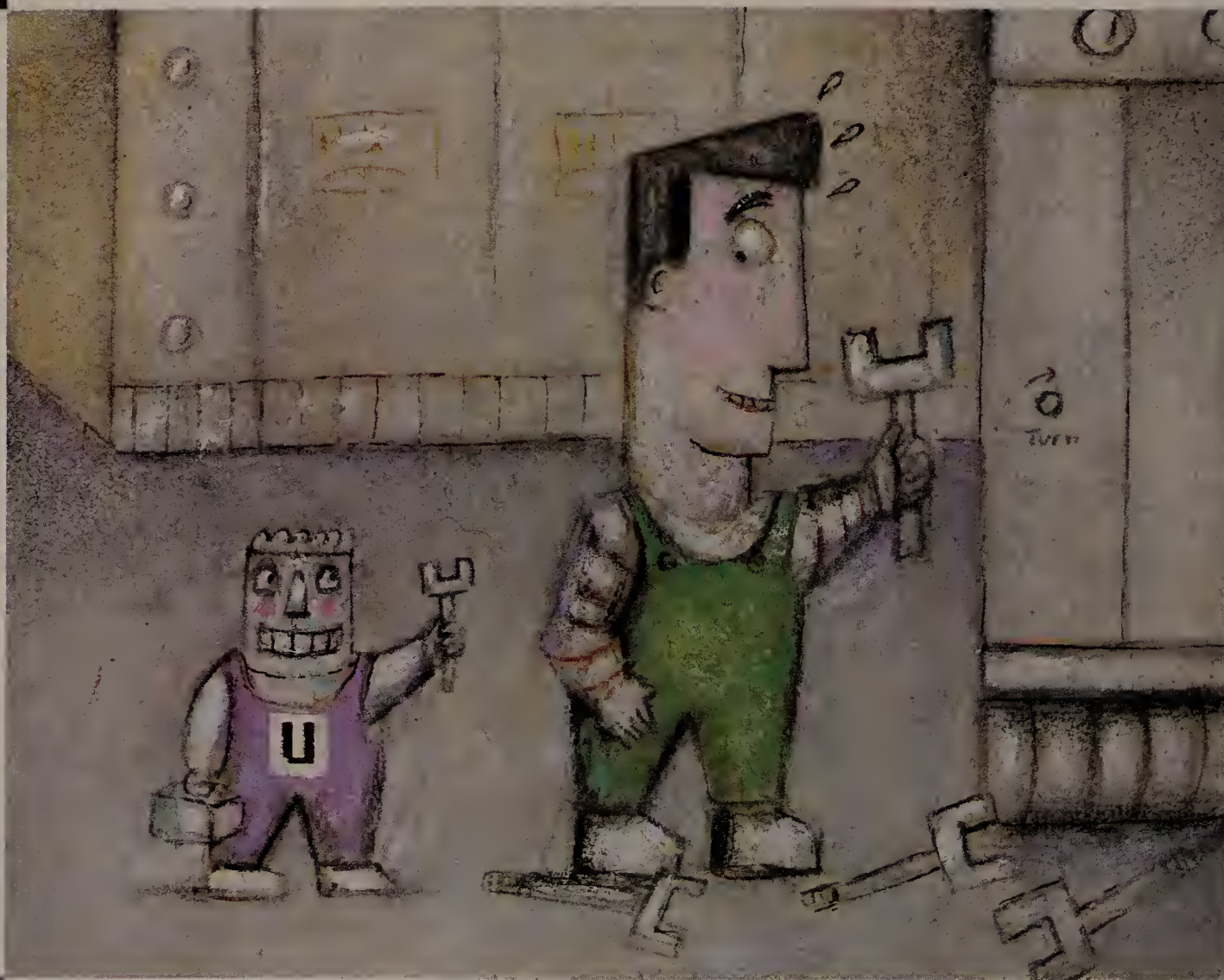
714/250-1718

List price: \$695, demo \$19.95

Requirements: 512K, DOS 2.00
or later version, hard disk
recommended

Not copy protected

U T I L I T I E S



KEYWORKS 3.0

TORNADO NOTES 1.72

XTREE 2.0

PIAZZ 1.0

HOMEBASE 2.5

A Key to Powerful Macros

*A new version
of Keyworks proves
that PC utilities
can focus on a
specific task
and still offer
significant service.*

JOHN WALKENBACH



Successful PC utilities are either jacks-of-all-trades or masters of one. For every multifunction program like the desktop organizer *Homebase*, a clutch of more single-minded utilities handle unique tasks, but do them well: *Pizazz* captures snappy color images, *Tornado Notes* unclutters your desk, and *XTree* manages your files.

Alpha Software's *Keyworks* 3.0 does what its predecessors have always done best: generate macros. This straightforward utility proves a worthy competitor for *ProKey* and *Smartkey*. Whether you're inserting boilerplate into a document or doing an end run around DOS, it's a pleasure to use.

Version 3.0 feels much like version 2.0 but has a number of new wrinkles that make macros easier to create and manage. Among the enhancements is the new Shorthand feature, which lets you use mnemonic abbreviations of up to eight characters to identify macros instead of hard-to-memorize <Ctrl>-key combinations. To execute a Shorthand macro, you type the mnemonic followed by a space or punctuation mark. Since the mnemonics are ordinary character strings, there is always the chance you could set off a macro by accident. To guard against this, *Keyworks* 3.0 gives you a Quick Bypass key (<GrayMinus>), which temporarily disables macro expansion.

Equally clever is a Quick Record feature that enables you to start recording a temporary macro with a single keystroke. Normally, when you create a *Keyworks* macro, you press <GrayPlus> to

bring down the menu, select Record, name your macro, and write. Quick Record bypasses all these steps: Just press <Alt>-<GrayPlus> and start typing. You don't even need to worry about naming your transient progeny; *Keywords* automatically gives it the name <Alt>-<Enter>.

Keywords is a boon for people whose skill at creating macros exceeds their ability to remember them. With version 2.0, if you wanted to play back a macro while recording a new one but couldn't think of its key combination, you were out of luck. In version 3.0, just press <GrayPlus> while recording; the menu that

pops up contains a new Macro Playback command that will display a list of all active macros. Via version 3.0's editor, you can also insert comments into a macro after you've recorded it.

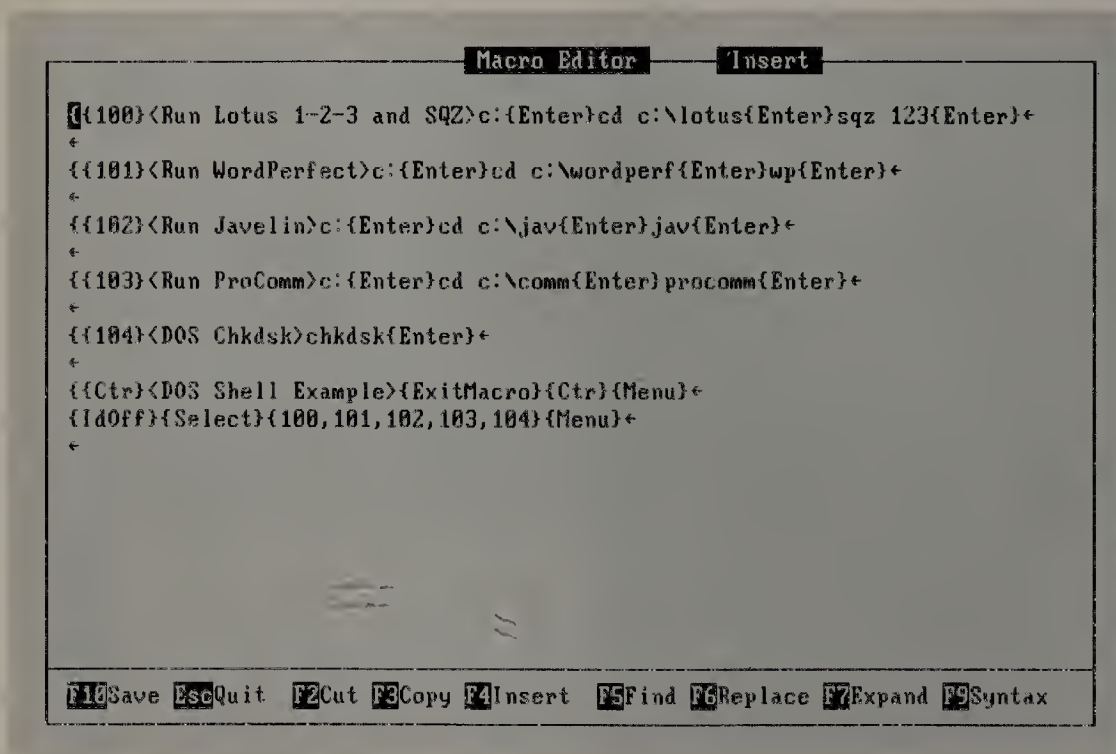
Need to lift numbers out of a worksheet and drop them into a document? Version 3.0's cut-and-paste function moves as much as a screenful of data in one trip, a feature made popular by *SideKick*.

Along with such management tools come some less important but equally handy enhancements. To give a sluggish program time to execute, you could insert pauses in 1/2-second increments in *Keywords* 2.0 macros. With version 3.0, you can set pauses as short as 1/8

second. And you can now write macro descriptions 60 characters long, up from 20.

Keywords 3.0 allows users with expanded memory boards to load large portions of the program into expanded memory. The utility supports IBM's 101-key enhanced AT keyboard, but it doesn't recognize <F11> and <F12> on the enhanced keyboard that comes with the Compaq 286 or 386.

In creating front-end menus for DOS commands, version 3.0 represents a marked improvement over its predecessors. With version 2.0, you could easily create a menu-driven application manager, but you needed a DOS batch file



The *Keywords* editor shows a macro file for a simple menu listing 1-2-3, SQZ, WordPerfect, Javelin, and Procomm. The 5 key on the numeric keypad brings up the menu, from which you invoke a program.

Executive Summary

Keywords 3.0

Memory-resident macro processor

Keywords 3.0 is a clever addition to the house 2.0 built. The program includes new tools for creating and managing macros, mnemonic names, and a Quick Record feature to create temporary macros. It also has a bypass feature to prevent macro playback and gives you more control over the speed of playback. You can now write longer macro descriptions, insert comments in macro files, and search for and replace strings.

Create and edit macros	<i>Excellent</i>
Create menus	<i>Excellent</i>
Execute macros	<i>Excellent</i>
Speed and convenience	<i>Excellent</i>
Overall value	<i>Excellent</i>

to call the manager and execute it after you exited a chosen application. Version 3.0 can determine when an application closes and returns to DOS and will then automatically bring up the front-end menu—or invoke any other macro you specify.

At press time, Alpha Software was working on a programmable macro generator called *Keywords Advanced*. The company claims the program will be able to read and respond to information on the screen, generate context-sensitive help screens, and capture and display screens in slide-projector fashion. The program will also support print enhancement macros. Very large macros will be stored on and executed from disk.

Keywords 3.0 represents a maturing of the single-purpose PC utility. It isn't radically different from its forebears, but it works with real deftness and economy—which is exactly what any good utility should do. ●

John Walkenbach is consumer research manager for a leading savings and loan association based in Southern California.

Keywords 3.0

Alpha Software Corp.

30 B St.

Burlington, MA 01803

800/451-1018, 617/229-2924

List price: \$99

Requirements: 81K, DOS 2.00 or later version

Not copy protected

The Forest Through the XTrees

*XTree is still
the reigning
hard disk manager,
but younger pretenders
covet its place
in the sun.*

DONALD B. TRIVETTE



Combine craftsmanship, a sense of style, and luck, and you sometimes get a classic, like Limoges china or Louis Vuitton luggage. In the world of hard disk managers, the classic is *XTree*. It's simple to use, easy on the eyes, and classically simple. *XTree* may not be the fastest or most sophisticated file manager around, but it can still bring order to a hard disk's jumbled collection of directories.

Introduced in the spring of 1985 by Executive Systems, *XTree* developed at a pace that went from frantic to placid: The program's developers cranked out three upgrades in the first six months, then rested on their laurels while some 150,000 users bought the results.

XTree has long ruled supreme, but *QDOS*, *WindowDOS*, *TopDOS*, and other file managers are luring customers away by being RAM-resident and adding powerful features. Still, *XTree* has maintained a healthy share of the market for one important reason: It puts the novice immediately at ease.

When you first load *XTree*, it rummages through the hard disk for a few moments and then displays the system's directories in a large window at the top left of the screen, as neatly arrayed as family names on a genealogy chart. The directories are in alphabetical order, as are the files within each one. There's no guesswork involved: The disk's organization, from the root directory to the lowest subdirectory, is laid out in precise detail.

Want to inventory the hard disk's contents? Pressing <PgUp> or <PgDn> shinnies the cursor up and down the tree, one directory at a time. When it lights on a name, the names of the first 12 files in that directory appear in the file window at the lower left. Press <Enter>, and the cursor moves to the first file in that window. Press it again, and the window expands, with room for as many as 57 file names. Completing the *XTree* interface is a window on the right that lists disk and file statistics, and a command menu that lines the bottom of the screen.

Exploring *XTree* is like opening Chinese boxes; the program displays basic disk information right away, then gives more details as

you dig deeper. When the cursor is on a directory in the tree display, for example, the statistics window shows the number of bytes and files on the entire disk. Move the cursor into the file window, and you get the same kind of informa-

This makes it easy to quickly check files when weeding an overgrown directory.

XTree can't cope with more than 180 subdirectories and 2500 files, a limitation that may chafe seasoned users as hard disk capac-

XTree may not be the fastest or most sophisticated file manager around, but it can still bring order to a hard disk's jumbled collection of directories.

Executive Summary

XTree

Hard disk manager

XTree is the standard against which other hard disk managers are measured. The program's trademark tree directory display clearly shows the connections between multiple subdirectories, making *XTree* well suited for hard disk novices. Drawbacks: *XTree* isn't RAM-resident, lacks a file backup feature, and can be slow to load.

Load files	Good
Display files	Excellent
Copy, move, and rename files	Excellent
Overall value	Excellent

tion, tailored to that directory. Put the cursor on a specific file name, and you can find out when it was created, its length, and its status (archive, read-only, hidden, or system).

Executing *XTree* commands is the kind of point-and-press operation that makes novices wonder why DOS commands were ever invented. From the tree display you can tag, untag, and print files, log on to another disk and create and delete directories, and perform sundry other tasks. You can execute many of the same commands from the file window. To tag or delete the files in a directory, you press T (or <Ctrl>-T to tag all files), then D (or <Ctrl>-D to delete all files). Experienced users will cheer when they learn they can rename a directory just as easily—a function that DOS fails to offer. For *WordStar* users, *XTree*'s View command is worth the price of the program. Because they contain control and upper ASCII characters, *WordStar* files are hard to read with DOS's TYPE command; *XTree* displays them in clean, readable English.

ity grows. If the disk has more directories than *XTree* can handle, *XTree* announces that it is ignoring the extra files.

Moreover, *XTree* loads a full disk slowly, since it first inventories the disk and reports on the number of files, the amount of reserved and available disk space, and other conditions. In *PC World* tests, loading time ranged from 5 seconds on a Compaq Deskpro 286 with only 600 files to 35 seconds on a PC with 2000 files on its Seagate 20MB hard disk. But even if loading takes time, the payoff comes when *XTree* gets to work. Since it has effectively mapped and memorized the disk's organization, *XTree* can find a file in a flash, leaving such upstarts as *Direc-Tree Plus*, *SNAP*, *dir WORKS*, and *WindowDOS* in the dust. But spryness, alas, isn't everything, and *XTree* is starting to show its age in other ways. Unlike *Snap* and *WindowDOS*, it lacks new-fangled features like a macro facility, a built-in text editor, and a file-backup utility.

Roused from complacency by competitors, however, Executive Systems is belatedly rallying to its product. At press time, the company was planning a new version of *XTree* that places no limit on the number of files and directories it reports and includes a macro processor and text editor. The upgrade should also load appreciably faster than version 2.0.

One thing *XTree* will not do is go memory-resident. Executive Systems says that few customers request this feature, and *XTree*'s designers feel that potential conflicts with other RAM-resident programs far outweigh the potential convenience. The company has earned customer loyalty by keeping *XTree* simple, easy to use, and problem-free. It has no intention of significantly altering a program that is elegant and a model of its kind—in a word, classic. ●

Donald B. Trivette is a freelance writer and consultant in Wrightsville Beach, North Carolina.

XTree version 2.0

Hard disk file manager

Executive Systems, Inc.

15300 Ventura Blvd. #305

Sherman Oaks, CA 91403

818/990-3457

List price: \$49.95

Requirements: 192K, hard disk,

DOS 2.10 or later version

Not copy protected

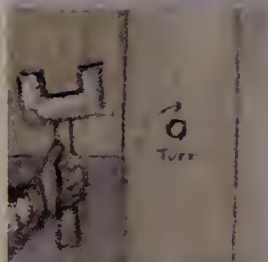
The Calm After the Storm

*Go from a desk
carpeted with bits of
paper to a neat stack
of instantly available
electronic notes.*

*A new version
of Tornado Notes*

*clears the way
for fast and efficient
note taking.*

PATRICK MARSHALL



If your desk is littered with enough paper to launch a ticker tape parade, it may be time to turn to *Tornado Notes*. It's a clever RAM-resident program that gives you a place to quickly file those proliferating ideas, memos, lists, and addresses. It takes, files, and retrieves notes without sully-ing a single scrap of paper.

Accessible at the press of a hot key, *Tornado Notes* manages a stack of up to 500 electronic notes, which appear on screen as overlapping windows of various sizes. It's easy to create and edit these mini text files, as well as to search through the stack for specific keywords, arrange the notes in order of importance, and even move text into and out of other applications. In addition, *Tornado Notes* offers template forms you can use to quickly jot down phone messages and names of sales contacts, and you can also create forms of your own.

Tornado Notes requires 50K of memory for the program itself, 3K for optional help information, and a note buffer adjustable to up to 54K. It can run as a stand-alone program, but it makes most sense as a RAM-resident helpmate.

Editing notes is simple: You leaf through the pile by pressing <CursorUp> or <CursorDown> until the note you want is highlighted and then select the Edit command from the menu line at the bottom of the screen. Once the cursor moves into the note, you can add and delete text at will.

Creating a new note is just as easy—press N for Note, and an empty box pops open on the screen, ready to receive information. *Tornado Notes*' editor uses *WordStar* commands.

Tornado Notes has so many slick tricks built in, it can take a

while to figure them out. For example, you can stamp notes with the time or date with a single keystroke. And though it's a bit clumsy, you can cut and paste text between notes: You copy the source note, join it to the destination note, and then trim away the extraneous text.

If you like, you can return to your main application without exiting the note editor; when you hot-key back into *Tornado Notes*, you're right where you left off. *Tornado Notes* will also let you make a note's window as big as the entire screen; the program automatically shrinks the window to fit the text when you're done. To discard a note, press T for Toss; a garbage-can icon with a prompt will make sure you mean it.

Tornado Notes' forte is exactly what most of us have trouble with: finding specific information fast. If a client calls and you need to find a certain note, for example, you can search the entire stack of notes in 2 seconds flat. *Tornado Notes* locates phrases, words, and even fragments of words. If your search word occurs in more than one note, *Tornado Notes* will produce as many notes as the search word appears in; pressing <Enter> displays them one after another. If there is only one possible match, the program will pop it onto the screen even before you finish typing the search word.

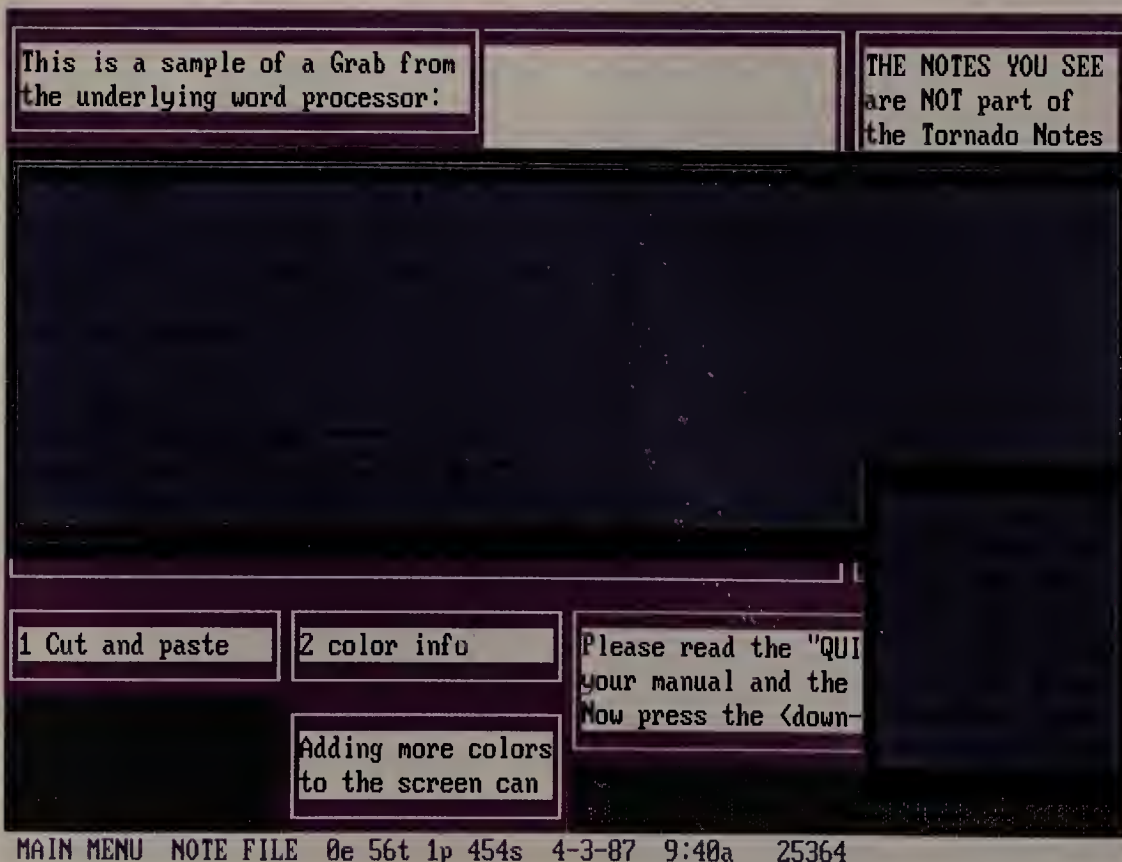
To make sure crucial items don't get lost in the shuffle, *Tornado Notes* lets you prioritize your notes. When browsing through them, pressing I for Important moves the displayed note to the

top of the stack. You can push notes you won't need for a while to the bottom of the stack by pressing B for Bury.

Tornado Notes makes taking telephone messages (or creating or filling out office forms) a breeze. When the phone rings, pressing two keys summons a standard form for phone messages. You can either save the finished note or print it out.

Finally, *Tornado Notes'* neatest trick lets you "grab" whatever is on the screen and pull it into a note, which is then put on top of the stack. Because *Tornado Notes* stores text in ASCII files, you can also export notes to other text-based applications.

Most users simply read their notes off the screen, but you can also print them by moving to the



Notes, menus, and message forms jockey for position on a busy *Tornado Notes* screen. Tossing out old notes will help keep your electronic notepad in good order, as will choosing bright, contrasting colors on a color monitor.

Executive Summary

Tornado Notes

RAM-resident note-taking program

Tornado Notes is a RAM-resident information handler that rides herd on up to 500 instantly available electronic notes. Once you create the notes, you can edit, link, and search through them—even rank them in order of importance. You can lift material from your current application at any time and turn it into a note—and vice versa. Designed for a person whose computer is on all day, the program can fast become a habit-forming convenience.

Ease of creating and editing notes	<i>Excellent</i>
------------------------------------	------------------

Cutting and pasting	<i>Excellent</i>
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Coexistence with other RAM-resident programs	<i>Excellent</i>
--	------------------

Overall value	<i>Excellent</i>
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Print menu and specifying how many notes you want to print. If you want to print the entire stack of notes, pick a high number.

An earlier version of *Tornado Notes* had a reputation for getting into nasty scraps with other RAM-resident applications, but Micro Logic seems to have fixed the bugs. *Tornado Notes* works well with most popular applications and with other memory-resident programs, although running it with *WindowDOS*—a RAM-resident disk manager—caused my system to freeze up.

For a program that specializes in information, *Tornado Notes* doesn't exactly spill the beans about itself. The menus are downright cryptic, and using the trash-can icon is the most intuitive part of the program. The documentation is thorough but plodding. Fortunately, the program provides a handy on-line tutorial.

Tornado Notes takes a while to learn but soon becomes second nature—and indispensable. It's the computer equivalent of an ever-watchful scribe with an infallible memory. ●

Patrick Marshall edits the Commentary Page of the Oakland Tribune.

Tornado Notes version 1.72

Micro Logic Corp.

100 Second St.

Hackensack, NJ 07602

201/342-6518

List price: \$49.95

Requirements: 128K, one disk

drive, DOS 2.00 or later version

Not copy protected

Homebase— There's No Place Like It

*In a world as crowded
with desktop organizers
as with the clutter
they are designed
to replace,
Homebase delivers
solid performance
at a reasonable price.*

KEN SMITH



Desktop organizers are for people with more jobs than hands. Summon these electronic marvels, and you can jot down a quick note, check your calendar, or calculate an equation—in short, capture and organize the myriad details that might otherwise fall off your desk.

The latest salvo in the war on chaos has been fired by Brown Bag Software, whose upgraded *Homebase* 2.5 features a report and label generator, a notepad with mail merge capability, a nifty calendar/scheduler, a DOS shell, and remarkably complete telecommunications capabilities. *Homebase* may lack *SideKick*'s speed and *Metro*'s macro powers, but it's an impressive program that excels in some of the areas where the competition is weakest.

Installing *Homebase* is a snap; friendly prompts explain each step of the process. Once installed, *Homebase* resides in memory and can be accessed with <Alt>-<Shift>-H. The opening menu, which looks a lot like 1-2-3's, displays a selection of commands across the top of the screen for accessing the various *Homebase* modules.

Homebase's calendar/scheduler module is pretty impressive. Along with standard daily, weekly, and monthly features, *Homebase* provides some handy options not found in *SideKick*, such as a special "to do" window for noting imminent tasks. The daily schedule also has an expense-tracking component for recording and adding expenses.

Within the limits of disk space, *Homebase* supports as many calendars as you like, so an office secretary can use the program to maintain individual calendars tailored to each staffer's work schedule.

Many desktop utilities provide limited telecommunications features, often just an auto-dialer; *Homebase* serves up the whole enchilada. QuickTerm, the *Homebase* telecommunications module, supports the XMODEM protocol, remembers your communications settings for later use, and offers a smart-terminal mode that emulates the *Crosstalk* command set.

QuickTerm can also be configured to handle calls in the background: If a friend calls while you're working in 1-2-3, he or she can connect and send you a file without interrupting your spreadsheet session. By toggling to active mode, you can chat with the sender, then return to your worksheet without missing a calculation.

Want to document your thoughts? *Homebase* provides a

triad of editor, data base manager, and report generator that *SideKick*'s designers would do well to emulate. The Notebase editor is quick and easy to use (it follows the *WordStar* command set) and can pass text to the other modules, including telecommunications.

Depending on the kind of information involved, you use the notepad in one of two modes. Use the free-form mode to jot down notes that you later find with the search function and output to the screen or printer. Use the template-based mode to print Rolodex cards, phone lists, or mailing labels. The template also generates report forms for organizing notepad output, while *Homebase*'s mail merge function lets you merge notepad data records with a form letter created with the editor.

To boost your productivity, *Homebase* also provides a DOS services module. You can run a program and access DOS functions—such as viewing and copying from files in other directories—without exiting your current application.

DOS services also features directory sorting and provides a nifty status window that reports on free disk space, free memory, current path setting, and the number of files in the current directory. Moreover, *Homebase* supports multiple nested directory windows, one for every directory and subdirectory on your hard disk.

After all this praise, it's disappointing to report that husky *Homebase* does have an Achilles heel: its calculator. The screen layout doesn't even resemble a calculator, and you have to enter calculations on a line removed from the answer-display area.

Each of the major desktop organizers on the market has its ad-

herents. *SideKick*, the most venerable member of the group, has legions of satisfied users, but its talents are uneven. The program's notepad is a full-featured text editor, and the calculator is solid, but the calendar quits at dinnertime, and phone capacity is limited to an auto-dialer.

Metro is the quintessential management tool. Its sophisticated List Manager excels at tracking projects, and the powerful macro processor and finance-minded calculator appeal to those who like to make computers hum and spreadsheets sing.

Homebase doesn't do macros, and its calculator is anemic, but it shines in such day-to-day business tasks as editing text, making phone calls, and watching the clock. The *Homebase* notepad generates everything from mailing labels to reports, and the telecommunications module is excellent. *Homebase*'s multiple calendars and "to do" lists can keep an entire office on schedule and even tally how much it costs to do it. ●

Executive Summary

Homebase 2.5

RAM-resident desktop organizer

Homebase 2.5 is a well-conceived upgrade of version 2.0 that holds its own against *SideKick* and *Metro*. Its notepad, telecommunications, DOS shell, and calendar modules are excellent, but the calculator is hard to use. Many of *Homebase*'s files reside on disk, which slows the program somewhat.

Time scheduling	Excellent
File handling	Excellent
Word processing	Excellent
Telecommunications	Excellent
DOS services module	Excellent
Calculator	Fair
Overall value	Excellent

Ken Smith is a technical support supervisor at a large software company in San Rafael, California.

Homebase version 2.5
Brown Bag Software
2155 S. Bascom Ave.
Campbell, CA 95008
408/559-4545
List price: \$89.95 plus \$5 shipping
Requirements: 256K, two disk drives, DOS 2.00 or later version
Not copy protected

Printing With Pizazz

Pizazz

moves images freely

from the screen

to the page—

and gives you

full creative control

along the way.

ROSS SMITH



To give your screen images flair, try *Pizazz*. A RAM-resident printing utility from Application Techniques, *Pizazz* lets you capture color and monochrome graphics, manipulate the images, and print them to disk or to a printer. Beyond giving you creative control over screen images, *Pizazz* makes them portable; once on disk, they can be printed out on systems different from the one on which they were created.

The premise behind *Pizazz* is simple: If you can put it on the screen, *Pizazz* can capture it. And once it's captured, you can manipulate an image to your heart's content. *Pizazz* lets you choose the image's size and proportions, rotate it, smooth rough outlines, and decide exactly where on the page you want it printed.

The program is easy to install, prompting you for information about your system's display adapter, printer, port, and parameters. If *Pizazz* can't automatically determine your application's display mode, it will also prompt you for that. To work properly, *Pizazz* must be installed for exactly the same mode as the application from which you intend to capture images.

Pizazz normally takes about 90K of memory, but you can load it so that it uses only 30K of main memory, storing the rest of the program on a RAM or hard disk and swapping code as needed. If *Pizazz* is the last program loaded in memory, you can remove it from RAM with a single command, a luxury not afforded by many RAM-resident utilities.

With the program in memory, you capture screens by pressing <Shift>-<PrtSc>. After a few

seconds, *Pizazz* displays its main menu. Print settings, colors, and installed hardware listings occupy most of the screen; a bar across the top offers the choice of Print, Color, Divide, Width, Height, and other functions.

Sizing images is easy with *Pizazz*: Pick either Width or Height as the critical dimension, and *Pizazz* will automatically calculate the other. The program can also indent or center an image automatically. Another boon is "smoothing," an antialiasing technique that softens the jagged edges that often appear on circles or diagonals in computer-generated prints.

Divide provides a way to crop images. Unless you specify otherwise, *Pizazz* prints all images at 7½ by 5⅝ inches, so printing a cropped section of the screen is an interesting way of generating enlarged views. Print out a small part of a text screen, for example, and *Pizazz* can yield letters an inch high.

If you want to print a captured screen in colors other than the original ones, choose Colors. *Pizazz* will display a chart showing the colors in the image. To change them, you simply assign them different numbers; the chart changes to reflect the new values.

Pizazz is able to dither, mix, and print up to 200 colors. To see what your color printer can do with *Pizazz*, you run COLORS.COM after installing the program. It yields a sheet of color samples much like a sample of house paints. *Pizazz* will also generate a sheet for noncolor printers, with an array of 30 shades of gray

and patterns ranging from circles to zigzags.

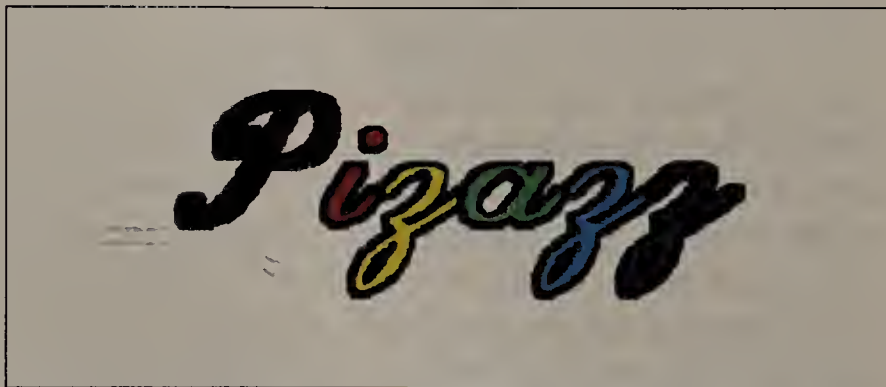
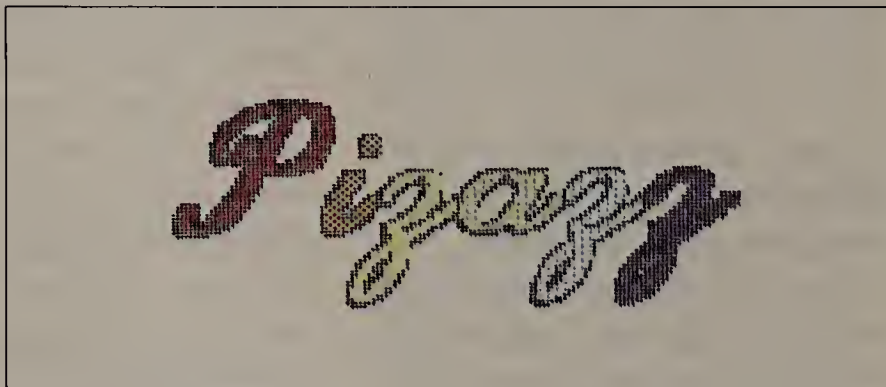
You can use *Pizazz* with a wide variety of hardware and software, but the documentation warns about specific mismatches. When using *Pizazz* with *Microsoft Word* and an EGA, the background of your screen can turn a disconcerting shade of brown. If you use a mouse, *Pizazz* requires that the mouse driver be loaded in memory before *Pizazz*—unless you're using Mouse Systems drivers with *PC Paint* or *PC Paint Plus*.

Pizazz 1.0 is a grown-up version of *ColorPrintScreen*, which got

good notices when it was first released in 1985. At press time, the company was preparing version 2.0, which will support 150 printer models and the 480-line resolution of Vega Deluxe and Quadram ProSync. (The new version will be bundled with many Tektronix printers.) Also in the works are utilities that will allow users to batch-print *Pizazz* files as well as edit their settings (to change the colors in an already-captured screen, for example). The company is also developing a utility to convert *Pizazz* files to the *PC Paintbrush* .PCX format used by programs like *Ventura Publisher* and Aldus's *PageMaker*. ●

Ross Smith is a freelance writer and founder of Computersmith, a Santa Rosa, California, consulting firm specializing in desktop laser printing applications for business.

Pizazz release 1.0
Application Techniques, Inc.
 10 Lomar Park Dr.
 Pepperell, MA 01463
 617/433-5201
 List price: \$59.95
 Requirements: 256K, two disk drives, DOS 2.00 or later version
 Not copy protected



Top: At low resolution and with "smoothing" turned on, *Pizazz* produces a crisp printout of a captured *PC Paintbrush* screen. Bottom: The same image at high resolution.

Executive Summary

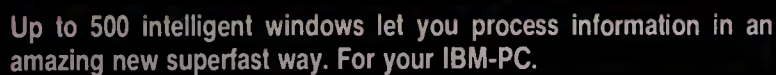
Pizazz

RAM-resident print screen program

Pizazz can capture images from the screen; control their size, proportions, and page placement; and print the results in 200 colors and 30 monochrome shades. *Pizazz* works well with most software and hardware combinations; *Application Techniques* warns against some specific mismatches. A utility under development will make *Pizazz* files compatible with *Ventura Publisher* and *PageMaker* file formats.

Ease of loading and use	<i>Excellent</i>
Image manipulation	<i>Excellent</i>
Color selection	<i>Excellent</i>
Printer control	<i>Excellent</i>
Overall value	<i>Excellent</i>

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"..."
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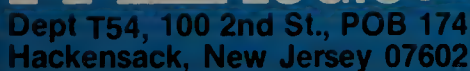
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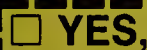


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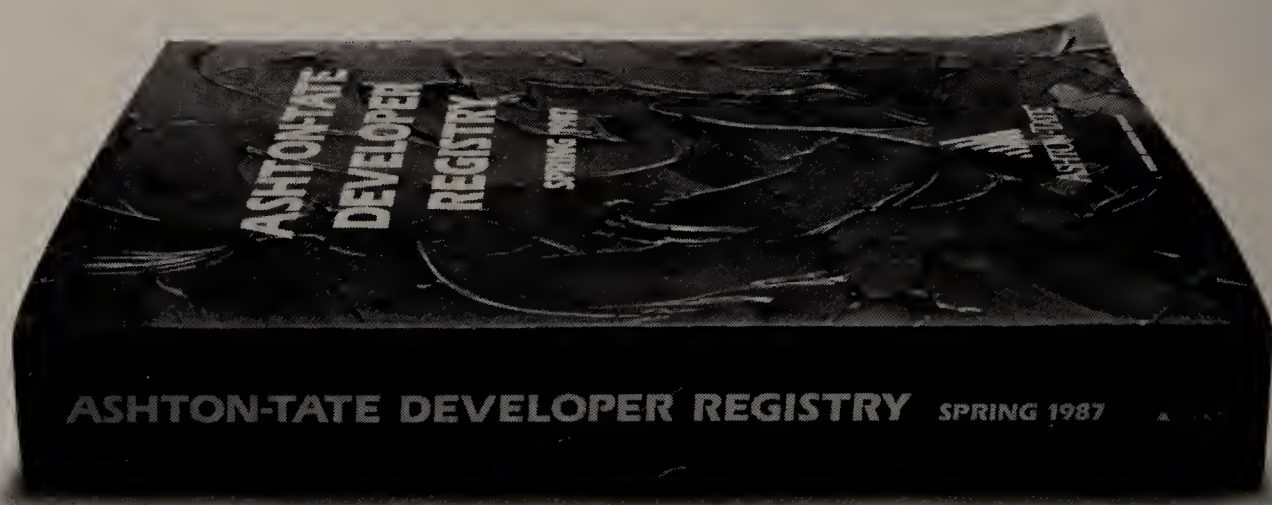
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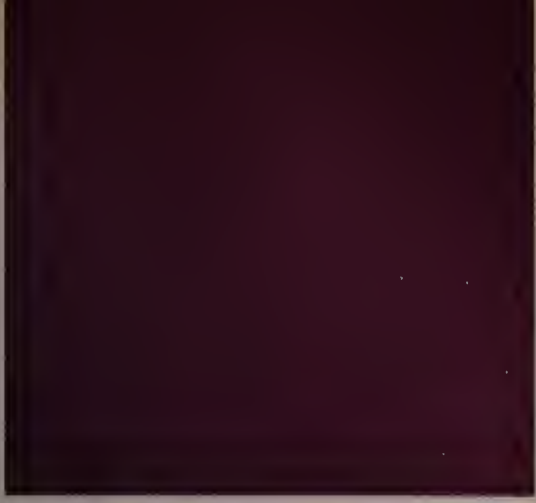
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The Upgrade Path

Hands-on advice for upgrading the PC, compatibles, and peripherals

This month: The letter quality printer within your Epson MX-80, megabytes of RAM for the PC, and duplicate cursor keypads for the PC and AT

Robert Luhn

Letter Quality MX-80

If any product cries out for treatment in *The Upgrade Path*, Dots-Perfect from Dresselhaus Computer Products is it. Designed to bestow near letter quality (NLQ) printing powers on humble Epson MX-80, MX-100, and JX and RX printers, the package is festooned with catchy lines like "You already own half a great printer" and "Attention all Epson MX owners: Upgrade your Epson MX printer to state of the art." State of the art is what it's all about, and within the snazzy packaging lies an equally snazzy 2-inch-by-2-inch circuit board that holds several ROM chips that can transform a printer—in this case, an Epson MX-80 built in 1981.

Transform is the right word. With the Dots-Perfect board in place, you not only get NLQ printing with the IBM Graphics Printer or Epson character sets, you also get a buffer-clear command and the ability to select different print styles from the printer's control panel.

As upgrades go, Dots-Perfect is somewhere in the middle of the angst continuum. Although you need only a small flat-blade screwdriver, a Phillips screwdriver, and a wire cutter, you must pull out the printer's character ROM chip, replace it with a small circuit board that plugs into the socket, attach a tiny connector to a resistor on the printer's circuit board, and finally, cut a wire. The manufacturer advises the uninitiated to turn to their dealers; but this procedure is not as daunting as it seems—the user manual is copiously illustrated, and its directions are precise. Just remember that when you cut a wire, you've

made an upgrade decision that's hard to reverse.

The first step is to unplug the printer from its power source and from the PC and remove any external cables. Then lift off the printer's hinged plastic cover and wire paper bail. (Some Epson printers also have a removable tractor feed mechanism.) Grasp the paper advance knob on the right side of the printer and pull it off its post.

Turn the printer upside down on a rug or other soft surface, remove the four recessed case screws with a Phillips screwdriver, and store them for later reassembly. Turn the printer right side up with the rear of the unit facing you. Gently pop off the printer's top, rotate the lid to the left, and lay it next to the unit. Remember that wires connect the printer control panel to the base of the unit, so don't yank the top off.

Toward the back of the printer, you'll find three chip sockets in a row labeled 1B, 2B, and 3B, from left to right. (In ancient MX-80s, chances are that only socket 1B will be occupied.) Before you install the Dots-Perfect board, you must remove any chips parked in this row. Take a small, flat-blade screwdriver and insert it between the chip and its socket. Make sure you don't put it between the socket and the printer's circuit board, or you could pry the socket off altogether.

Twist the blade gently to lift the end of the chip, then slip the screwdriver farther in, twisting it all the while. You'll hear some creaking during the extraction, but as long as the chip's pins aren't bent, you're doing it right. When the chip is free of the socket, lift it

(continues)

out with your fingers and set it aside. In the process, you might discover a thin plastic pin guide clipped to the top of the socket. Remove this and any pin guides in the other ROM sockets, using the screwdriver or your fingers.

The bottom of the Dots-Perfect board is lined with 24 pins, matching those on the chip you just removed. Orient the board with its two small chips on the left and the large chip on the right. Set the pins on the Dots-Perfect board into socket 3B, place a finger on each end of the biggest chip on the board, and press down evenly until the board is seated in the socket. Although the Dots-Perfect board is sized to fit, be careful not to crush nearby transistors and other components when you push the board in.

All but one of the signals needed to run the Dots-Perfect board are funneled through the socket. To capture this last signal, you must take the black spring hook attached to the Dots-Perfect and clip it around the wire on resistor R17 closest to the rear of the printer. The resistor lies just behind the printer's paper-handling mechanism and to the left of a large black chip on the circuit board. Press the top of the spring hook and attach the revealed miniature metal grippers to the resistor wire. Next, if there's a jumper wire labeled J1 on the printer's circuit board, you must snip it with a wire cutter (or a pair of nail clippers) and bend the ends apart. Lastly, locate the SW1 and

SW2 switch blocks at the back of the printer and set the switches according to the manual.

Now you can reassemble the printer, plug it in, and connect it to the PC. To verify that the Dots-Perfect board is installed correctly, activate the printer's built-in self test by holding down the LF button on the control panel while turning the printer on. The MX-80 comes to life and spits out 'Dots-Perfect NLQ Upgrade'; copyright information and a ream of sample characters follow.

At this point, selecting modes and printing styles simply involves pressing combinations of the on-line, LF, and FF buttons. You initiate all selections with the printer on line. (When the printer is off line, the LF and FF buttons operate normally.) For example, to print a file in NLQ mode, you merely tap the FF key while the printer is on line (the MX-80 beeps to confirm the choice) and print away. Of course, if you want to print only selected text in a given style, you can issue the appropriate Epson Grafrax-plus escape codes. Otherwise, press FF and the on-line buttons simultaneously, scan the manual's list of available options (numbered 1 through 12, from condensed type to 8½-inch-wide paper), press FF the appropriate number of times, and finally press the LF button to confirm the choice. You can also combine functions to suit your printing whims.

Granted, Dots-Perfect won't turn your Epson into a LaserJet. But if you occasionally need near letter quality output and dread the prospect of parting with your faithful printer, Dots-Perfect is a near perfect solution.

Dots-Perfect

Dresselhaus Computer Products
8560 Vineyard Ave. #450
Rancho Cucamonga, CA 91730
800/368-7737, 714/945-5600
List price: \$79.95

Thanks for the Memory

In its day the 64K PC was considered capacious. But software dreamers have a way of pushing the envelope until it rips, and today many programs demand 512K of RAM and more. Even if you don't need the services of a *Paradox* or similar RAM hog, you might want to work on a massive 1-2-3 worksheet without chopping it up or save time by running disk-bound operations (such as indexing a data base) in a roomy RAM disk. An Intel AboveBoard/PC or compatible board with a couple of megabytes of expanded memory can give EMS-savvy applications all the elbowroom they need and then some (see "The RAM Revolution," PCW, January 1986).

Not only are Godzilla-size RAM disks possible with the AboveBoard/PC, but many popular programs such as 1-2-3 release 2, *Symphony*, and *Framework* can store data in expanded memory. Other programs, such as *Ready*, automatically recognize the presence of an AboveBoard and stash most of their program code in expanded memory, freeing up precious conventional memory for other applications.

(continues)



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The Upgrade Path

A single AboveBoard/PC can provide as much as 2MB of expanded RAM for the IBM PC, XT, and most compatible systems. Some of this RAM can be allocated to conventional memory, but remember that on an older PC-1 with a 64K motherboard, system switches cannot be configured for more than 544K of conventional memory. If your classic PC is already topped out in the conventional memory department, don't configure the AboveBoard/PC to fill the 96K gap between 544K and 640K—devote the entire AboveBoard contingent to expanded memory. On the other hand, if your system has only 256K or 320K, letting the AboveBoard/PC pick up the slack will be worth the gain in conventional RAM (even if 96K on the board is essentially thrown away). On PC-2s and XTs, which can access a full 640K, no reallocated AboveBoard RAM is wasted.

Plugging an AboveBoard/PC into the PC is like installing most memory boards. You flip a few switches on the board to indicate existing system memory and what role the AboveBoard/PC will play, make related settings on the PC's motherboard, and run some installation software. The process is relatively simple, although the user manuals that come with older versions of the AboveBoard/PC include serious typographical errors that can complicate things.

In our example a 2MB AboveBoard/PC is installed in a dual-floppy 544K PC-1. The first 64K of RAM is socketed on the motherboard, while a multifunction board supplies the rest—a com-

mon configuration for older PCs. Keep in mind that a PC using an AboveBoard/PC must have at least 256K installed.

Pull the board out and lay it on its antistatic wrapper. Locate the DIP switch block at the top right corner of the board near the mounting bracket. The first switch indicates whether the board (*not* the PC) uses 64K-bit RAM chips or the 256K-bit variety. You don't have to be a cryptographer to figure out what's installed—the coding on the chip tells the tale. For example, the RAM chips on our board were labeled P51C256H-20. The 256 indicates that each chip can store 256,000 bits of data. Other RAM chip manufacturers use similar coding schemes. Set switch 1 to the On position.

At this point, you need to identify what kind of PC you have. Instead of searching for BIOS ROM dates with DEBUG, simply look at the PC's backplane. PC-1s hold the cover on with two screws; PC-2s use five screws and have a *B* stamped on the back.

With this information in hand, consult the AboveBoard and system board switch-settings table in the AboveBoard/PC manual. Note that the section headings in some manuals may be transposed. The left section should be labeled PC-1 switch settings and the middle section, PC-2 switch settings.

Switches 2, 3, and 4 determine how memory on the AboveBoard/PC is allocated. Because the PC-1 in this example is filled to the brim, classify the AboveBoard/PC's 2MB as expanded memory by setting board switches 2 and 4

(continues)

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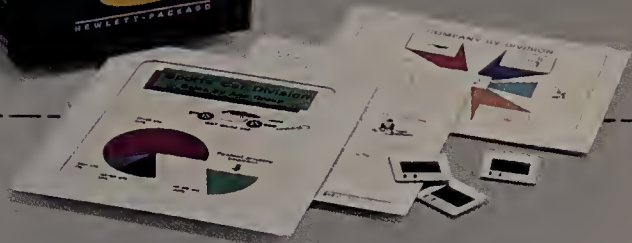
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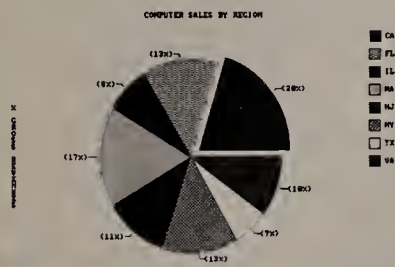
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The Upgrade Path

to On and switch 3 to Off. However, if your system was low on memory to start with, you will probably want to assign some of the AboveBoard/PC's RAM to conventional memory. Simply slide a finger down the left column of the table and find the amount of RAM that your system holds; to the right will lie the appropriate switch settings for the PC and the board.

To set the PC's switches and install the board, turn off the PC, remove the power cord and all external cables, and slide the hood off. Plug the AboveBoard/PC into an available slot, tighten it down, and reassemble the PC. You're now ready to install the AboveBoard/PC's Expanded Memory Manager software.

Slip a DOS disk in drive A: and turn on the PC. Once the system is up and running, make a copy of the Intel utilities disk, put the copy in drive A:, put the start-up disk for an application program (such as *WordStar*) in drive B:, and type **A:SETUPAB**. The SETUPAB program displays a menu of popular programs that can use the board's supplied print buffer and RAM disk programs. Select a program (such as *WordStar*) and another menu appears. SETUPAB sweeps through the PC and the AboveBoard/PC, calculates available conventional and expanded memory, and displays the results in the menu, along with recommended RAM disk and buffer sizes for the selected program.

In our example, SETUPAB notes that total conventional memory is 544K and total expanded memory 2048K, and it recommends a 64K print buffer and a

192K RAM disk. Since a print buffer isn't desired this time around, press **M** (Modify), set the buffer to **0**, and press **<Enter>** to confirm the values. Don't forget to answer the next prompt, which stores the setup values to the system disk in drive B:. If you later check the disk in drive B:, you'll discover that EMM.SYS and QUIKMEM2.SYS are now present and that a CONFIG.SYS file holding the statements **DEVICE = EMM.SYS M015** and **DEVICE = QUIKMEM2.SYS** has been created as well.

When you exit the SETUPAB menu, the PC restarts. Quickly slip the modified start-up disk from drive B: into drive A:. The 'Testing expanded memory page # *n*' message appears, and the program flips through every 16K memory "page" on the AboveBoard/PC. The program eventually notes that the Expanded Memory Manager has been successfully installed and that a RAM disk has been established as drive C:.

At this point, you can use SETUPAB to modify start-up disks for other applications. For programs that support the AboveBoard/PC, such as *Framework*, you need only add EMM.SYS to the start-up disk and reference it in the CONFIG.SYS file. Programs that can't take full advantage of expanded memory—such as *WordStar*—can at least be configured to run in a RAM disk. Either way, you'll find that your programs run faster. If you don't mind the occasional disk

(continues)

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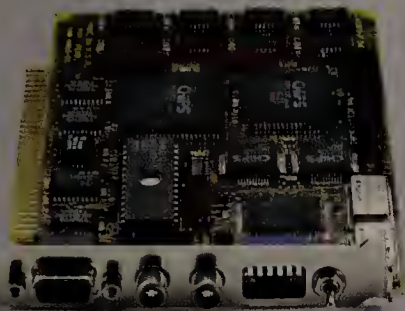
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Keyboard Extenders

If you're a heavy spreadsheet user, chances are you've come to loathe—at least subconsciously—the keyboards supplied with the PC, the XT, and the original AT. Why? Because scooting around a worksheet and entering numbers via the same keypad means toggling in and out of NumLock mode ad infinitum.

If the prospect of buying a new (and more expensive) keyboard with separate cursor and numeric keypads is just as loathsome, never fear. Genest Technologies offers stick-on cursor keypads called Keypatch 10 and Keypatch AT for the PC and the AT, respectively. Aside from cursor, page, <Home>, and <End> keys, the Keypatch 10 includes <Ins> and <Del> keys; the AT version throws in status-indicator lights for the <NumLock>, <Scroll-Lock>, and <CapsLock> keys. Each add-on measures about 3 by 8 inches and sits (with the aid of supplied adhesive pads) right above the keyboard's existing keypad.

Installing a Keypatch is as simple as swapping keyboards. Turn off the system, pull out the keyboard connector, and plug in the Keypatch's 9-pin equivalent. Then slip the keyboard's connector into the piggyback receptacle on the Keypatch cord. Whip off the paper strips covering the adhesive pads on the bottom of the Keypatch and slap the device onto the keyboard. Turn on the system, and voilà—you're ready for action. Keypatch 10 and Keypatch AT work like charms with almost any program, including *Microsoft Word*, *Keywords*, *SuperKey*, *1-2-3*, and others that are fussy about the keyboard.

As with most patches, a few stitches are bound to show. Turn on or restart a Keypatch-equipped PC, and you'll discover that NumLock is on. (With NumLock on, pressing any Keypatch cursor key enters a number instead of moving the cursor.) Toggle NumLock status off, and the Keypatch 10 takes over all cursor movement duties while the original keypad is devoted to numeric entry. The AT version of the Keypatch is always dedicated to cursor movement, whatever the NumLock status.

Keep in mind that the Keypatch 10 and Keypatch AT may not work amiably with certain software-hardware combinations. For example, on some AT clones running *Microsoft Word* version 3.10, the Keypatch AT's <Ins> key deletes text; on other AT compatibles, you may lose the ability to paste deleted text held in *Word*'s

(continues)

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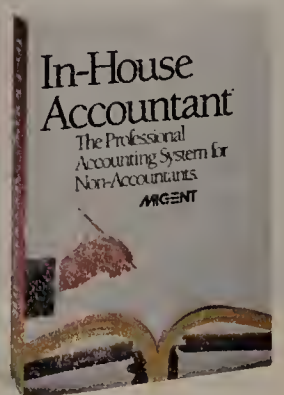
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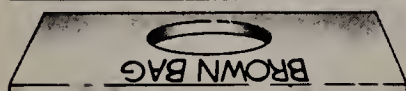
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PC Magazine, Mar. 31, 1987

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Scrap buffer. A spokesman for Genest Technologies notes that *Samna Word* and other programs that redefine the <Shift> and <NumLock> keys can throw the Keypath a curve; the *Word* problem is under investigation. In the meantime, when in doubt, reach out and ask the makers of Keypatch about your compatible system.

Keypatch 10

Keypatch AT

Genest Technologies, Inc.

1331 E. Edinger Ave.

Santa Ana, CA 92705

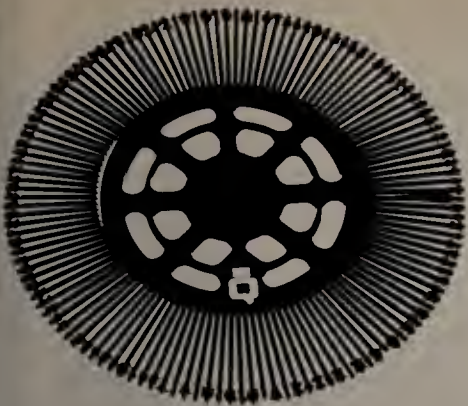
714/547-0880

List price: Keypatch 10 for the IBM PC \$84.95, Keypatch 10 for PC compatibles \$89.95, Keypatch AT for the IBM AT and compatibles \$92.95

Upgrade Update

Adaptec, maker of RLL hard disk controllers for the XT and the AT, can now be reached at 408/432-8600 (see "The 50 Percent Solution," *The Upgrade Path*, PCW, May 1987).

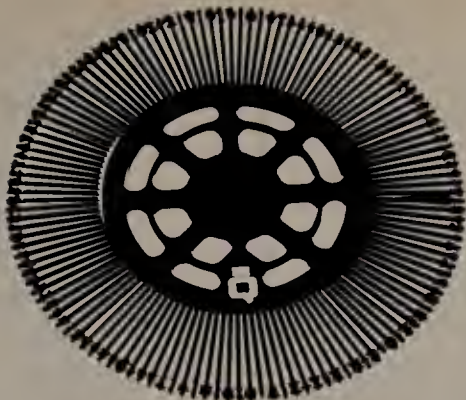
Please forward submissions and queries to The Upgrade Path, PC World, 501 Second St., San Francisco, CA 94107 or electronically to MCI Mail PC-WORLD/179-3813, CompuServe 74055,412, or The Source STE908. Articles submitted by mail should be accompanied by a self-addressed, stamped envelope and an ASCII file of the item. ●



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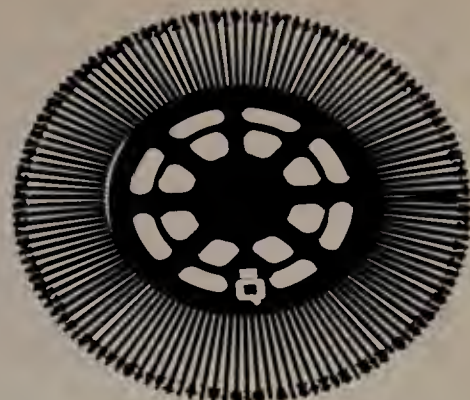
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Consumer Watch

Advice and information for the computer consumer



Trying to decipher a product warranty is a mind-numbing experience. This month, PC World cuts through the legalese and explains what protections hardware and software warranties really provide.

Anita Amirrezvani

1. Warranties for consumer goods are a double-edged sword. Although they promise repair or replacement of malfunctioning products, they also limit a company's liability and oblige consumers to take certain steps before claiming their rights. The license agreement that accompanies most software warranties also binds consumers to specific conditions. "When companies sell their products outright, they can't control what consumers do with them," says Ellen J. Beilock, an Oakland, California, attorney specializing in computer law. "But by licensing software, vendors seek to impose restrictions, like those dealing with trade secrets or reverse engineering, to protect the ideas in their products." Most licenses permit consumers to use the program on one computer at a time but do not confer the rights of ownership.

2. Under federal consumer warranty law, most software and hardware warranties are *limited*, as opposed to *full*. A full warranty requires manufacturers to repair a malfunctioning product for free during the specified time period without obliging consumers to do anything other than point out the defect. A limited warranty provides fewer protections and often imposes specific obligations. For example, you may have to return software within a specified time to claim warranty protections or pay shipping charges to get broken hardware repaired.

3. Until recently, most software vendors sold their products "as is" and limited their warranties to defects in the physical floppy disk. Goaded by former California assemblywoman Gloria Molina's effort to regulate warranties legislatively, ADAPSO (Association of Data Processing Service Organizations), the industry trade group, issued a statement in April 1986 promoting "express warranties that program[s] will perform substantially in accordance with the published specification statement, the documentation, and authorized advertising." Says Joe Ruble, assistant general counsel for ADAPSO: "Our goal is to give consumers reasonable redress. Under the guidelines, if a program doesn't perform as stated and the vendor can't fix it, consumers can get their money back." At press time, 70 companies had complied with the guidelines, including Lotus, Ashton-Tate, MicroPro, and Microsoft. User advocate Jerry Schneider, president of the Capital PC User Group, supports the guidelines but thinks vendors should offer 30-day money-back guarantees. "Too many software packages deliver unpleasant surprises," says Schneider.

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6. Like warranties for other consumer goods, hardware warranties usually provide protection against defects in materials and workmanship over a specified period of time. But note that a hardware warranty may not be valid unless you purchase the product from the manufacturer or an authorized dealer. To protect yourself when buying from a third party, try to get the original proof of purchase, such as a receipt. And remember that you must adhere carefully to the warranty's preconditions. You may invalidate the warranty agreement if, for example, you open up and modify the monitor or have the product serviced at an unauthorized repair site.

7. Consumer law bends over backwards to help the little guy; the laws regulating business purchases differ and are often tougher. Under federal consumer law, warranties for products that cost more than \$15 must be available for inspection at the time of purchase. Because you can't do much about a warranty you think deficient, you should take a new product for a spin before buying it to verify that it meets your needs. If, however, a problem develops that you can't resolve through the manufacturer, call your local attorney general's office for information on state consumer laws. Remember, laws vary widely among states and may work for or against you.

Celerity Software, Inc., and Hyperbole Computer Corporation are fictitious companies. However, their warranties resemble actual warranties.

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Shop Talk

Unwarranted Behavior

Last year I purchased an AT compatible from PC Designs in Tulsa, Oklahoma. After using the machine for 29 days, I decided I wanted a portable instead. But when I called PC Designs to take advantage of its 30-day money-back guarantee, the company refused to honor it. Richard Griffin, the brother of PC Designs' president, said the guarantee was valid only for software incompatibility. But PC Designs' user manual clearly states, "If you are not completely satisfied with your purchase you may return it to PC Designs within 30 days for a full refund, including the cost of postage required to send it back." A follow-up letter complaining of false advertising to Patrick Griffin, the company president, didn't change anything.

Nicholson L. Pine

Collegeville, Pennsylvania

PC Designs responds: I don't believe most of our customers ever assumed they could return a computer for no reason. Of course, if Mr. Pine's AT hadn't worked with the software he wanted to use, we would have refunded his money. I think most people would say that's a reasonable way to do business.

Our current advertising and user manuals have been changed to indicate that a computer can be returned if it doesn't work with a user's software. Mr. Pine was a victim of an older manual and older information.

Richard Griffin

Chief Operating Officer

Editor's note: PC Designs' documentation certainly gave the impression that the computer could be returned under any circumstances. We're glad the company has changed the wording in its manual, but ideally, PC Designs should provide refunds to consumers who were misled by the older guarantee.

Back and Forth

I purchased an AT compatible with a Tulin hard disk from American Micro Technology in April 1986. When the hard disk crashed in October, I called AMT and was told to return it for free replacement. I sent it back, and when nothing arrived after a week, I phoned again and received assurances that another disk would be sent promptly.

After waiting for two weeks, I talked to another representative who said he couldn't find the bad hard disk, but that it would be replaced if I could get a shipment tracer from UPS showing that AMT had received it. This process took several weeks. In late November I called again, discovered that the company *had* received the shipment tracer, and was told the hard disk would be sent out the same day. In mid-December, I called yet again and spoke to yet another representative. He said the hard disk wasn't under warranty because Tulin had gone out of business, and that AMT would not be sending a replacement.

J. Thomas Pirnie

Grand Island, Nebraska

AMT responds: I've called Mr. Pirnie and sent him a new hard disk. Since December 17, 1986, no one in my department has been contacted about this matter; otherwise, it would have been resolved long ago.

J. B. Saiid

Manager, Technical Services

Editor's note: Not many people would have gone to the lengths Pirnie did to resolve the problem. Just for the record, AMT provides a 90-day warranty on its AT compatible and a one-year warranty on the motherboard. Hard disk warranties vary by manufacturer.

No Visible Means of Support

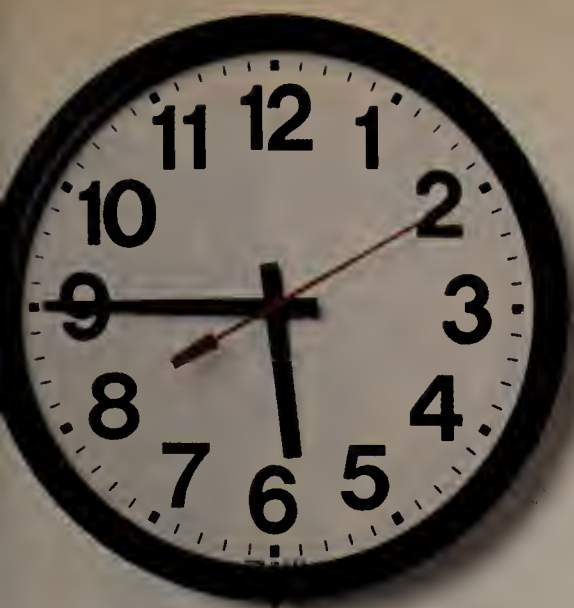
I am thoroughly disillusioned with the technical support provided by Micro Education Corporation of America (MECA), maker of the highly publicized and widely recommended *Andrew Tobias' Managing Your Money*. Although I wrote to MECA for help once in January and twice in February, I received no response. And I haven't had much luck getting through on the phone, either.

Leslie F. Smith, Jr.

Eugene, Oregon

MECA responds: We feel terrible about letters like Mr. Smith's, which we get fairly often due to a user base of 170,000 customers. MECA has a staff of 12 full-time customer representatives, but even a staff that size can't handle all the calls and letters promptly. This is particularly true during our peak months of December, January, and February, when many new users are learning the program and veteran users are upgrading to the

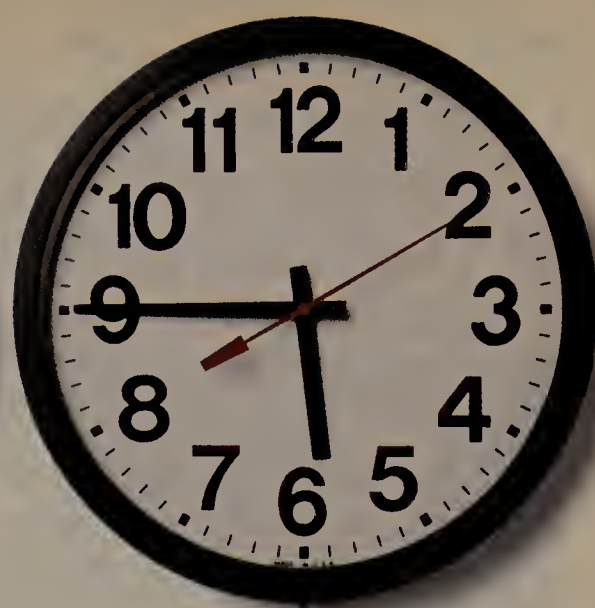
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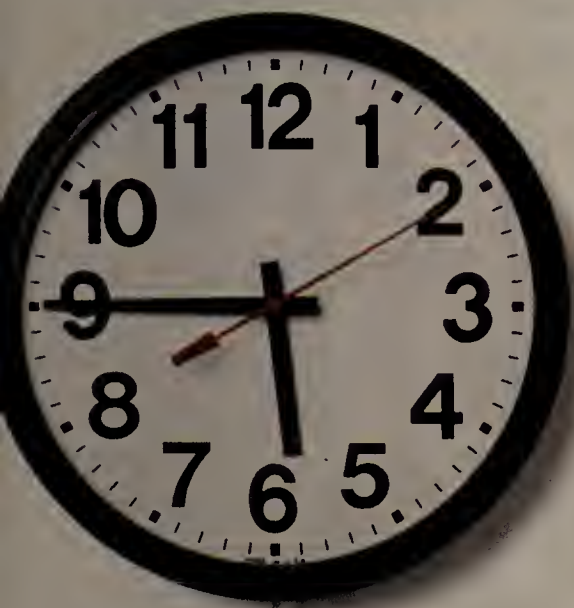
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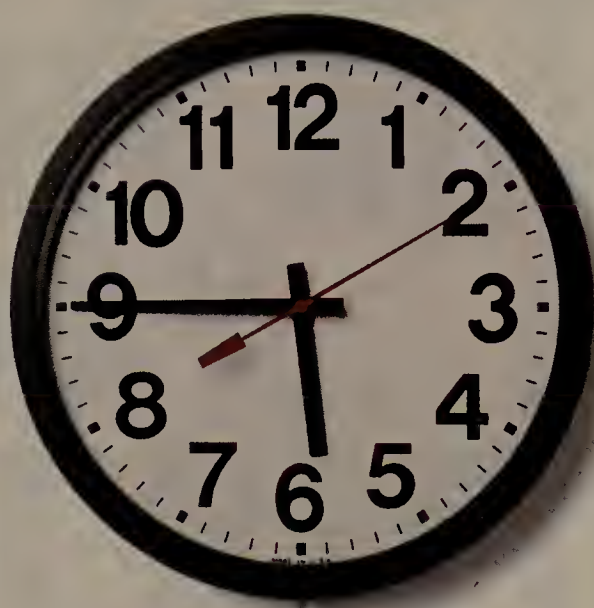
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Fruits and vegetables (and whole grain cereals such as oatmeal, bran and wheat) may help lower the risk of colorectal cancer.

In short, make sure you do what your mother always told you to do. Eat your vegetables.

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Consumer Watch



new version. And it's not feasible to hire more customer representatives during those months.

We're working hard to make customer service more efficient and to make the program even more self-explanatory. Let's not lose sight of the thousands of customers who are happy with the program and its support. As a user wrote to us recently, "Once a call gets through, I get terrific service."

Gerald M. Rubin
President

Editor's note: In "Making Money Manageable," an article on Managing Your Money in this issue, our reviewer describes her heroic efforts to get through to MECA's support staff. This abiding problem mars an otherwise excellent product.

Who's Zoomin' Who?

In December 1986, I ordered Migent's *Enrich*, which was advertised with a 30-day money-back guarantee. After receiving the software and reading the manual, I realized the program didn't meet my needs; I repackaged it and returned it the next day.

A month later, I called Migent to track down my refund and was referred back and forth among departments. Over the next month and a half I was subjected to various excuses, including "your check is in the mail."

Finally, I called and threatened to alert the magazines where Migent advertises, thinking that would prompt the company to cut the check. Even so, the refund didn't arrive until early March.

Allen Glazer
Berkeley, California

Migent responds: We received Mr. Glazer's package on January 20, had a check printed by February 13, and mailed it out the same week. A four-week processing period is standard for most mail-order refund requests.

Our money-back guarantee began in December and has generated a flood of orders. We have now modified our procedure so that customers receive their refunds much more quickly.

Michael Caughlan
Customer Service
Representative

Editor's note: Migent reported that Glazer ordered additional products worth several hundred dollars from the company; then, after receiving the products, he stopped payment on his check. Glazer explains that he "decided to turn the tables on the company"; PC World's position is that there are better avenues for getting satisfaction.

Got a gripe? Want to set the record straight? Write Consumer Watch, PC World, 501 Second St., San Francisco, CA 94107, or use MCI Mail PCWORLD/179-3813, CompuServe 74055,412, or The Source STE908. Include your name, city, state, and daytime telephone number with all correspondence. Letters may be edited for length and style. Due to volume, not all letters can be acknowledged. ●

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vertising in the pages of *PC World*, we hope this particular section will offer you a useful buying service.

You can buy from any of the mail-order advertisers with confidence. And, *PC World* is here to help in the unlikely event you have even minor problems. All you have to do is drop me a letter briefly explaining the situation. I will look into it immediately and respond as quickly as possible.

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Cordially,

A handwritten signature in dark ink, appearing to read 'James E. Martin'.

James E. Martin
Vice President and Publisher
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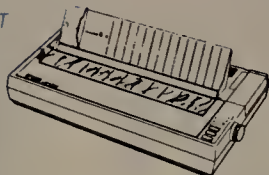
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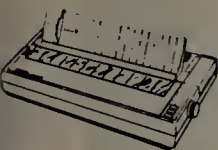
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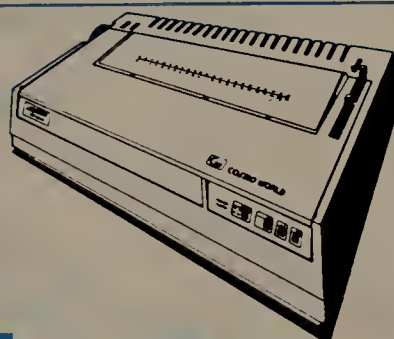
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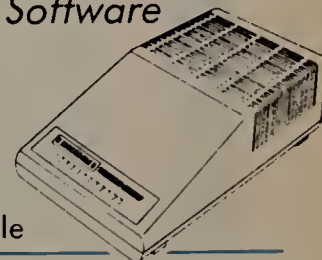
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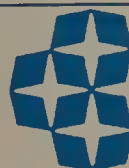
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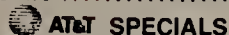
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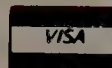
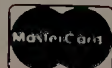
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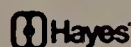


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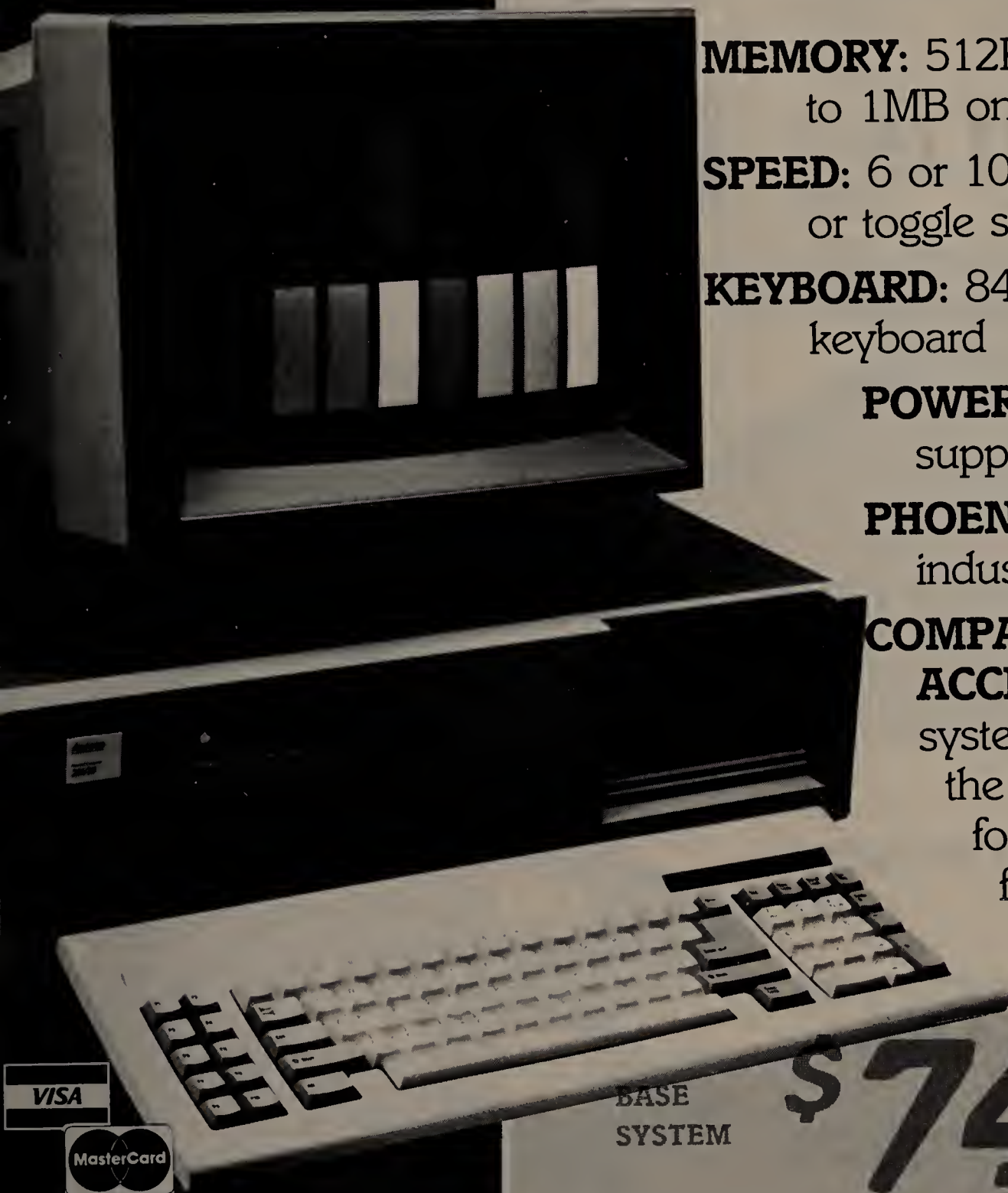
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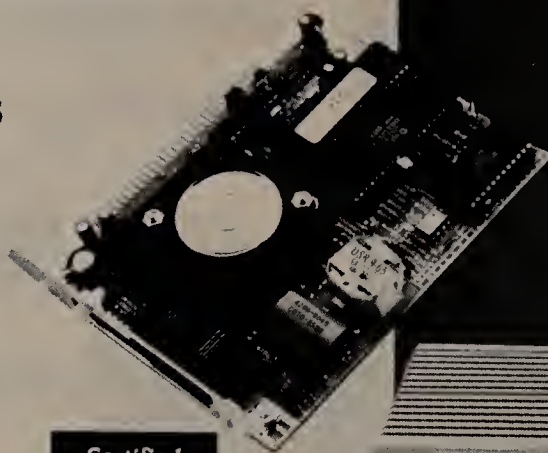
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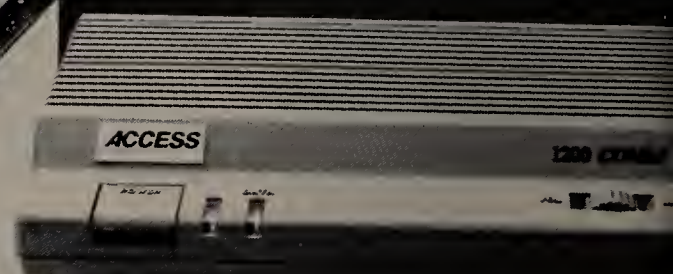
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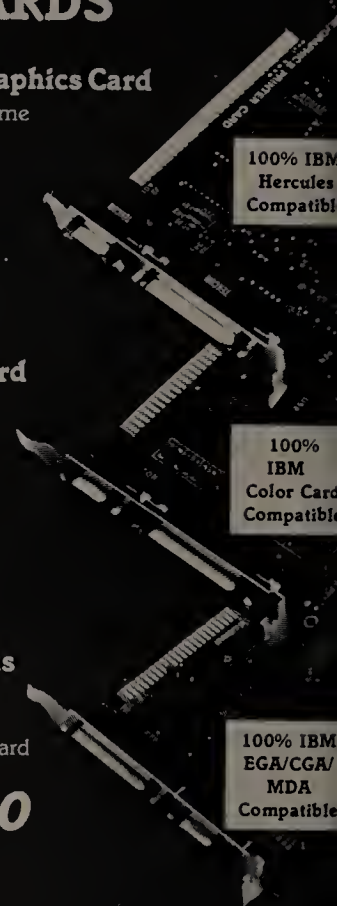
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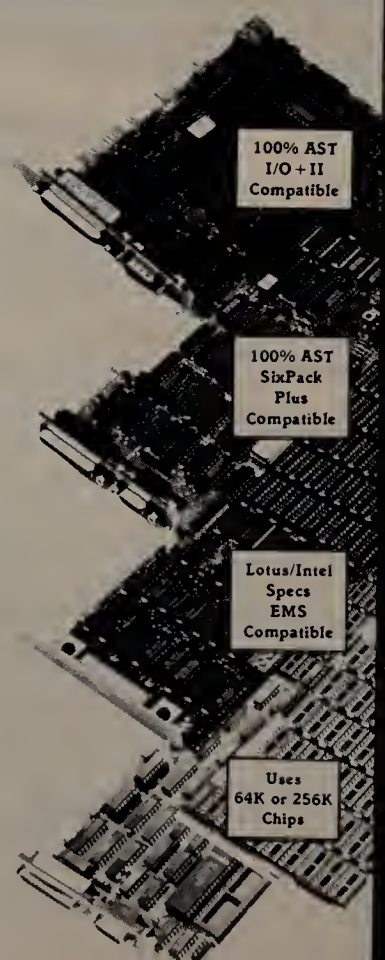
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Teach Microsoft Word to put its margins where you want them, listen to a network installation horror story, make RESTORE scream for attention, park a Hardcard, discover the secret of using Cruise Control with Windows, and revisit BASIC FIELDS.

Karl Koessel

A Matter of Style

Q. Microsoft Word starts up with default margin settings of 1 inch on the top, 1.25 inches left, and 1.25 inches right. Because I prefer to work with margins 0.5 inch on the top, 0.7 inch left, and 0.5 inch right, I must enter the Format Division menu, tab around, and reset the margins each time I start the program. Is there a way I can start Word with my margin settings?

I went through the article "Outlining With Style" [PCW, October 1986] but found no help there. Besides, using style sheets seems to disable the speed-formatting <Alt>-key functions (centering, boldfacing, italicizing, and so forth) that I use constantly.

*Charles T. Petchel
New York, New York*

A. You can have your cake and eat it, too.

Start Word and press <Esc> G to bring up the style sheet. If anything other than the end-of-file diamond appears, press D repeatedly until the PC beeps. In any case, now press I to insert a new style into the sheet. The Insert menu appears. Type S/ (which represents Standard Division) for 'key code'; <Tab> to 'usage' and press D for Division; <Tab> to 'variant', press <CursorUp> to select Standard; <Tab> to 'remark', type MY WAY (in capital letters), and press <Enter> to return to the Insert menu. Now format the margins by typing FM (Format Margins). Type 0.5 for the top margin, press <Tab> twice, enter 0.7 for the left margin, press <Tab> once more, enter 0.5 for the right margin, and press <Enter> to return again to the Insert menu. Next, save the style sheet by typing TS (Transfer Save), and press

<Enter> to accept the default file name NORMAL.STY. Finally, press E to exit to the document window.

Note that the right-margin indicator (|) is now at 7.25 in the ruler line. Every time you start Word, the NORMAL.STY style sheet is chosen by default; no more resetting the margins before you get down to work.

Of course, this NORMAL.STY file must be in the current directory when you start Word. In fact, you might want to keep Word's program files in their own subdirectory and set up different subdirectories for different types of documents. (Be sure to include Word's subdirectory name in the PATH command of your system's AUTOEXEC.BAT file.) That way, you can keep a different, appropriately tailored NORMAL.STY file in each subdirectory; when you change to a document subdirectory and then call Word, the program will start with that subdirectory's NORMAL.STY style sheet attached.

What about speed formatting when a style sheet is attached to a document? Just precede the speed-formatting command with the letter X. For example, the speed centering that you previously chose with <Alt>-C is now obtained via <Alt>-XC.

Hard Disk Casualty

Q. The company I work for recently suffered a major data loss. I thought your readers might want

(continues)

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The Help Screen

to read about it, and I am certainly interested in hearing their comments.

The company is currently researching the desirability of connecting our 15 PCs, ATs, and compatibles with a network. We hired a consulting firm to assist us in our study. The consulting firm felt it was necessary to first test all the non-IBM machines to see if they would work on the IBM Token-Ring network.

The first machine tested seemed to work just fine on the network, so the consultants decided to run CHKDSK on its 20MB hard disk. That crashed the hard disk. Because the non-IBM machine had been started with a PC-DOS 3.20 disk and the hard disk had been formatted with MS-DOS 3.10, I suspect the problem stemmed from attempting to write to a disk formatted with one type and/or version of DOS while the PC ran another.

I'd like to hear from readers who've had similar experiences switching between different types as well as versions of DOS.

Bruce H. Miller

New York, New York

A. Although I appreciate the inconvenience you must have suffered, I disagree that the problem lies in having PC-DOS 3.20 write to a disk formatted with another type and version (MS-DOS 3.11). Instead, I suspect that the use of the MS-DOS version of the CHKDSK command, while running on the network with PC-DOS 3.20, is the cause of your

hard disk's demise. (I say "suspect" because issuing the MS-DOS command CHKDSK under PC-DOS 3.20 without the network running should generate the error message 'Incorrect DOS version'.)

CHKDSK should never be issued for a networked drive. On a properly running network, CHKDSK should return the error message 'Cannot run CHKDSK on a network drive'. (You can remove the drive from the network and then run CHKDSK.) There are other DOS commands that should not be used on the network, and network consultants should be aware of them all. In any case, a network installation should never begin without backing up the hard disks first.

A Request With a Ring

Q. I use DOS's BACKUP command to back up hard disk files onto disks. Occasionally, I need to restore a file that has been accidentally deleted or corrupted. However, the need to restore has been so rare that I hadn't given the RESTORE command much thought until recently, when my employer bought an AT to replace my XT.

While restoring my XT's files onto the AT's hard disk, I noticed that, unlike the BACKUP command, the RESTORE command does not beep when it asks for the next disk. That wouldn't be a problem if I just sat glassy-eyed in front of the AT during the entire

(continues)

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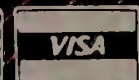
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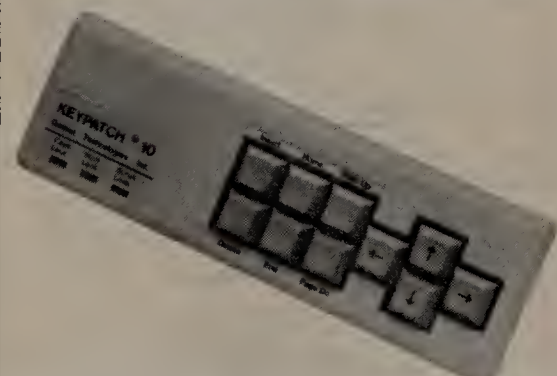
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The Help Screen

restore. But I decided to do some paperwork at the same time because restoring every file takes forever. Almost every time I looked up from my work, I saw the message 'Insert backup diskette xx in drive A:—Strike any key when ready' on the screen of my idle computer. I would put in the next disk, press <Enter>, and resume working.

I actually finished all my work before the restore was done. That made me think that a beep in RESTORE's prompt for a new disk would help save the time lost from the point when the message appeared to when I looked up to see it. The BACKUP command has a beep in its prompt; can RESTORE have one? I don't want to buy a new backup program or a tape backup unit. I'd just like to improve what I have.

*Eric Hamberg
 San Francisco, California*

A. It's easy to put a beep in RESTORE's prompt. Using DEBUG, you simply replace the prompt with another (of equal length) that includes ASCII character 7, which is also called the bell, or beep, character.

Bring up the hard disk's DOS prompt and change to the directory containing the DOS command RESTORE.COM. Type **DIR DEBUG.COM** and press <Enter>. If the message 'File not found' appears, put the DOS Supplemental Programs disk in drive A: and type **COPY A:DEBUG.COM C:** and press <Enter>.

Now type the first two lines of boldface characters in Figure 1. The first line invokes DEBUG and loads the file RESTORE.COM. The second line is a DEBUG Search command that looks through RESTORE.COM for the character string (in this case, RESTORE's prompt) specified between the double quotes. The string must be entered exactly as shown; the first S is capitalized, and there is only one space between each word.

Figure 1's third line, which is returned by DEBUG, is the address in hexadecimal of the first character of the matching string in RESTORE.COM. The first four numbers before the colon (represented

(continues)

```
C:\DOS>DEBUG RESTORE.COM
— S 100 FEFF "Strike any key when ready"
xxxx:117D
— E 117D "Strike a key when ready" 7 20
— W
Writing 177C bytes
— Q
```

Figure 1: Using DEBUG, you can easily modify RESTORE's prompt to include ASCII character 7, the beep.

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The Help Screen

by xxxx) vary from machine to machine and can be ignored. The last four characters, however, are needed for the Edit command, the fourth line in the figure. The number shown in the figure, 117D, is the string's address for DOS 3.20's RESTORE.COM. Other versions of DOS may return a different number, but you can still continue with this patch as long as your Edit command uses the number returned by the Search command.

Type the fourth line carefully, following the E with the address returned by the Search command. Note that the word *a* replaces the word *any*, making the message string two characters shorter. The Edit command in Figure 1 adds the ASCII characters 7 and 20 hexadecimal (7 and 32 decimal) to the end of the new message string. Those characters add the beep and a space, yielding a new message string that's the same length as the original. Finish up with W

<Enter> and Q <Enter> to write (save) the patch onto the disk and quit DEBUG. RESTORE will now beep each time it tells you to 'Strike a key when ready'.

Valet Parking

Q. I have an XT to which I have added a Hardcard-20 Plus as drive D:. After reading about PARK.BAT ["Parking Problem," The Help Screen, PCW, March 1987], I tried to use the batch file printed there to park the read/write heads of drive C:. It worked for drive C:, but instead of displaying the message that the system was ready for transporta-

tion, the IBM diagnostics parking utility went on to park the heads of drive D:, the Hardcard. Because I feared potential problems, I interrupted the process with <Ctrl>-<Break>.

Does the IBM diagnostics parking utility automatically try to park the heads of every hard disk drive in a PC? Is it possible to park drive C: only? I'm concerned that I will have a problem if I decide to move my XT.

A. Although it may not be true for every hard disk on a board, Plus Development says that you can use PARK.BAT without worry. While the Hardcard will park and lock its heads automatically when you shut your system off, running the IBM Diagnostics parking utility will not harm the Hardcard.

Cruisin' With the Windows Down

Q. In his review of Cruise Control [From the Software Shelf, PCW, March 1987], Patrick Marshall says that this program "works uncomplainingly with Microsoft Windows." Unfortunately, that is not my experience. After the Auto-Dimmer kicks in, I find it impossible to restore the screen. When I called Revolution Software, I was told that Windows "takes over" the screen and therefore Cruise Control will not work properly with the program.

(continues)

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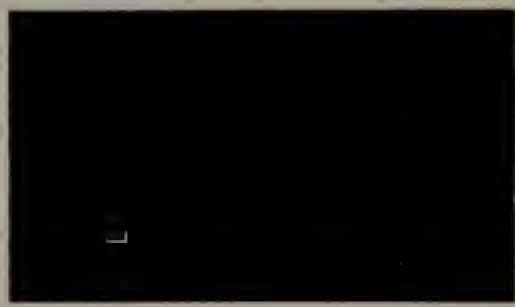
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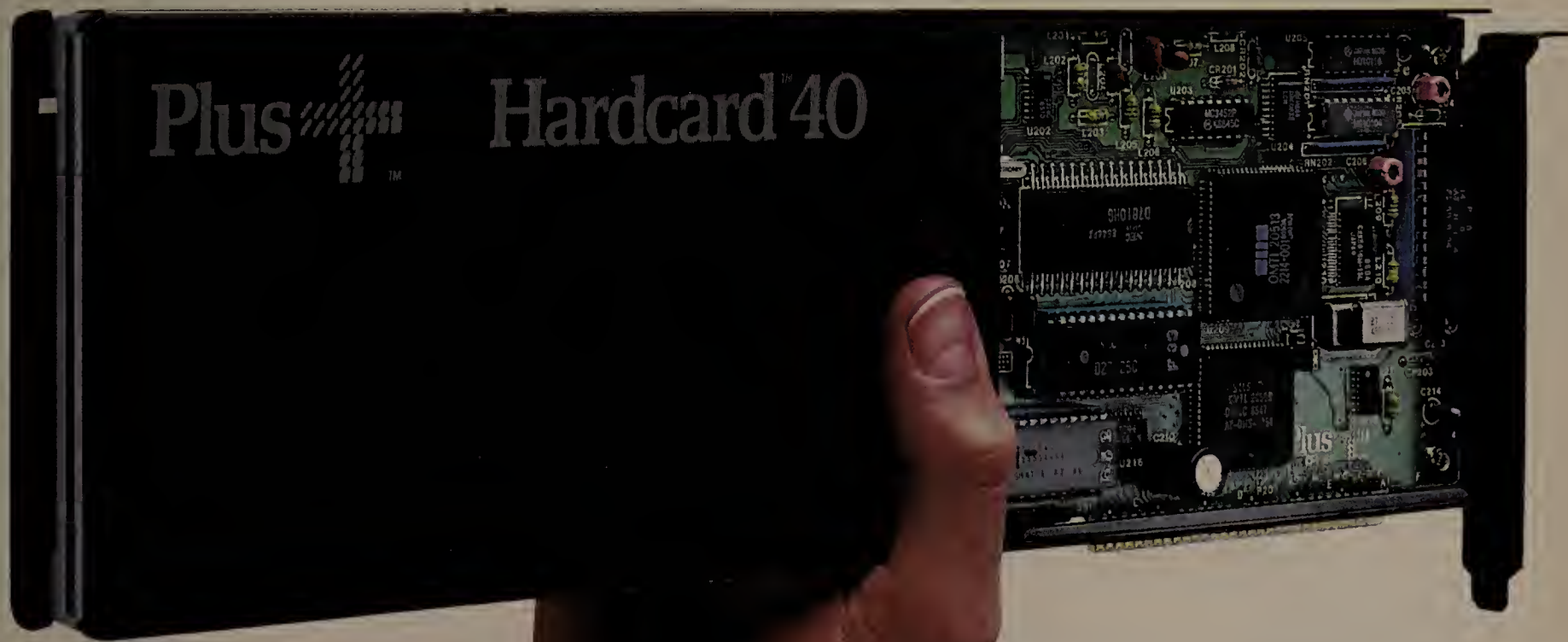
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The Help Screen

Since Mr. Marshall seems to have had good results, perhaps he can share his secret of using Cruise Control with Windows.

Robert Orkand
Westport, Connecticut

A. On behalf of Patrick, here's the secret. Assuming that you are using DOS 3.00 or a later version, and that *Cruise Control* is in a directory called C:\CRUISE and *Windows* is in C:\WINDOWS, type the following lines at the DOS prompt:

COPY CON C:\WIN.BAT <Enter>

C: <Enter>

\CRUISE\CRUISE /0 <Enter>

CD \WINDOWS <Enter>

WIN <Enter>

\CRUISE\CRUISE /10 <Enter>

Now press <F6> and then <Enter> to create the batch file WIN.BAT in the root directory of drive C:. By entering C:\WIN at the DOS prompt, you can bring up *Windows* with *Cruise Control's* Auto-Dimmer disabled. When you exit *Windows*, the Auto-Dimmer is reenabled.

If you happen to bring up *Windows* without this batch file (that is, with the Auto-Dimmer active) and the display goes blank, you can press <Ctrl>-<CapsLock> to bring back the screen. Then, from the MS-DOS Executive, pull down the File menu and select *Run* to issue the command C:\CRUISE\CRUISE /0 to disable the Auto-Dimmer.

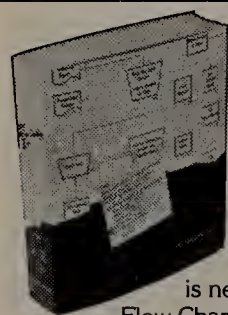
Mea Culpa

A few readers have pointed out that the answer to FIELDing an 8192-byte record into 2048 4-byte fields, although straight out of the IBM BASIC manual, doesn't work (see "Sowing a Random FIELD," *The Help Screen*, PCW, March 1987). Trying to set a field to 300 characters yields an 'Illegal function call' error because interpreted BASIC will not accept strings longer than 255 characters. Further, the technique used cannot fit enough DUMMY\$ variables in a single BASIC line (which is also limited to 255 characters) to move the file buffer pointer to the depth needed.

Apparently, the only solution is to use a BASIC compiler, such as IBM's BASIC Compiler or Microsoft's QuickBASIC Compiler, that allows longer string lengths or longer statements. For example, in QuickBASIC, the problem can be solved with the following code:

```
dim a$(2047)
open "foo" as 1 len = 8192
for i = 0 to 2047
field 1, i*4 as dummy$, 4 as a$(i)
next
```

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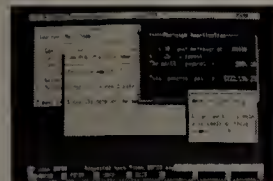
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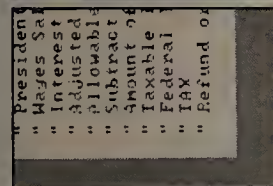
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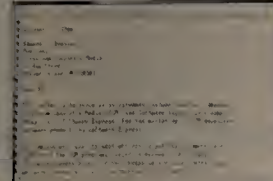
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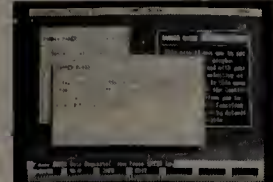
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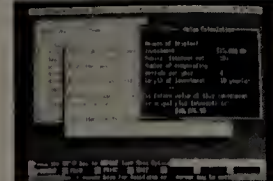
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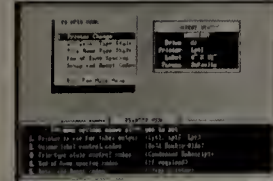
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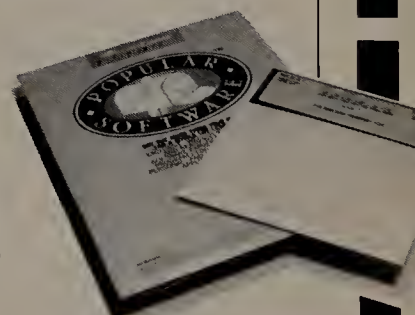
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Put password protection in 1-2-3 macros, maintain a macro master, readily retrieve worksheets from any directory, make some swift moves in WordPerfect, enhance an envelope macro, control Clipper's cursor, modify Microsoft FORTRAN, and more

Edited by Mike Cushman

Passwords Without a Trace
Users of Lotus's 1-2-3 release 2 can keep sensitive worksheets from prying eyes by activating the password option when they save a worksheet. However, in a macro-run spreadsheet designed for an office, it is prudent to also design a security system within the macro menu itself. That way, access to certain menu selections such as data entry can be available to an office staff in general, while access to more destructive menu choices such as modify, delete, or purge can be limited to designated individuals.

A macro that requires a password entry is easy to construct. Creating one that doesn't display the entered password, however, is a bit tricky.

I have created a macro subroutine that uses the {get} command to achieve this. To demonstrate it, enter the text shown in Screen 1 into columns AA and AB, beginning at row 1. (Remember to type an apostrophe before entering the slash and the backslash.) Go to cell AA1, issue the command */Range Name Labels Right*, then press **< PgDn >** and **< Enter >**. Now go to cell B18 and type **Enter password:** and press **< Enter >**. Select */Range Name Create* and enter **passwd_screen**. Go to cell D18 and issue */Range Name Create* again. Type **middle** and press **< Enter >**. Press **< Home >**, go to cell D10, and save the worksheet.

Because this macro is a subroutine, it must be called from another macro. For this example, **<Alt>-P** will call the password macro subroutine. To test the password subroutine, press **< Alt > -P**. When the prompt appears, type **eagle** and press **< Enter >**. The message 'Thank

you' will appear, and the cursor will move to cell A1, indicating that the correct password has been entered. Now press **< Alt > -P** again, and enter **mother**. Assuming that the password macro has been created correctly, the macro will display the message 'Access denied', halt 1-2-3, and return you to DOS.

*Jerry Ruppert
Harrisburg, Pennsylvania*

Filing 1-2-3 Macros
I regularly need similar macros in different 1-2-3 worksheets. So I put my most frequently used macros in a worksheet file (which I call MACRO1) and retrieve that file when I begin to design a new worksheet. Thus, every new worksheet has my most common macros in place and ready. I find this technique a tremendous time-saver, especially since many of my macros facilitate worksheet development.

For instance, how many times have you had to set the date format and type out the tedious @DATE command? With the following macro available, I just type **<Alt>-D** and fill in the numbers and requisite commas:

```
DATE
'\D
'/RFD4~
'@DATE{?})~
```

Do you find that you often define a range temporarily for printing or sorting? I just press **<Alt>-R** to invoke the following macro, which enables me to quickly specify a range and have it automatically named ALL:

```
RANGE CREATE
'\R
'/RNC
```

(continues)

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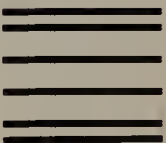
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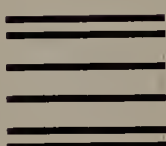
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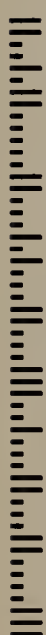
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```

AB4: 'Password Subroutine
user
pass eagle
dump
Password Subroutine
password {goto}passwd_screen~{goto}middle~
{blank middle}~
{windowsoff}
{get user}
contd {get dump}{if dump="~"}{branch compare}
{let user,user&dump:value}{branch contd}
compare {if user=pass}{blank user}{blank dump}{return}
{restart}{windowson}Access denied~
{wait @now+@time(0,0,2)}
{blank middle}{branch goodbye}
goodbye /qy~
Password Calling Macro
\p {breakoff}{password}
Thank you~
{breakon}{home}
10-Apr-87 01:34 PM

```

Screen 1: A 1-2-3 password macro subroutine

ALL~
{?}~
 Once the range ALL is defined, I can use <Alt>-S to start my ascending-sort macro and then simply move the cursor to the sort column of my choice and press <Enter>:

SORT
'\S
/DSD
ALL~
{?}~

Your macro file could include other functions, such as special printer control codes and margin setups, that you'll want to have on hand in each of your worksheets. Remember to save each new worksheet you develop with its own name, leaving the macro file intact. With judicious selection of

the most commonly needed macros, your 1-2-3 sessions can be less tedious and more productive.

Andrea Mandel
Wayne, New Jersey

Navigating 1-2-3 Directories

If you need to retrieve a file from a directory other than your current Lotus worksheet directory, you can do so without typing in the full path and file name and without using the /File Directory command. Simply select /File Retrieve as if you were going to retrieve a file from the current worksheet directory.

If the file you want is a sub-directory of the current worksheet directory, when the file names appear, move the cursor to the name of the directory that holds the file (or subdirectory) you want and

(continues)

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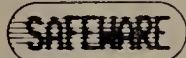
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press <Enter>. That subdirectory's worksheet file (and subdirectory) names will then appear, and you can move the cursor to the desired file (or subdirectory).

If the file you want is in the parent directory of the current worksheet directory, press <Backspace> when the file names appear, and you'll move up a directory level. The list of worksheet files and subdirectories will appear. You can then select the desired file, press <Backspace> again to move up another level, or move into another subdirectory.

This technique will enable you to navigate through all your directories; it works for both the standard single-line file list and the multiline listing displayed in response to /File Retrieve <F3>. I can find no reference to this capability in the Lotus manual.

Bill Garrison

Bowling Green, Kentucky

A WordPerfect User's Moving Words

For a long time I've wanted a better way to move a word or a short phrase in *WordPerfect*. Using Block and Move is clumsy and slow.

Well, I finally discovered a method. Place the cursor anywhere under the first word of the phrase to be moved. Use <Ctrl>-<Backspace> to delete the phrase a word at a time. Next, put the cursor where you want the deleted words to appear, then press <F1> and type a 1 to Restore. It's a lot easier than Block and Move.

To move a group of words that extends to (or past) the end of a line, place the cursor under the first letter of the first word and press <Ctrl>-<End> to delete to the end of the line. Then use <Ctrl>-<End> again or <Ctrl>-<Backspace> to delete any other words to be moved. As before, place the cursor at the desired destination and retrieve the deleted words with <F1> and 1.

Peter Boulton

Calgary, Alberta, Canada

Addressing the Larger Issue

We are grateful for the *WordPerfect* envelope macro by Terry Boss ["WordPerfect Envelopes," *.*, PCW, March 1987].

It works well for three- or four-line addresses, but to our dismay it does not work with five- or six-line addresses (foreign addresses, for example). When using the macro we lost everything beyond the fourth line.

By adding the <CursorDown> commands as suggested, we got longer addresses to print, but three- or four-line addresses were no longer printed correctly; the macro printed the salutation line as part of the address.

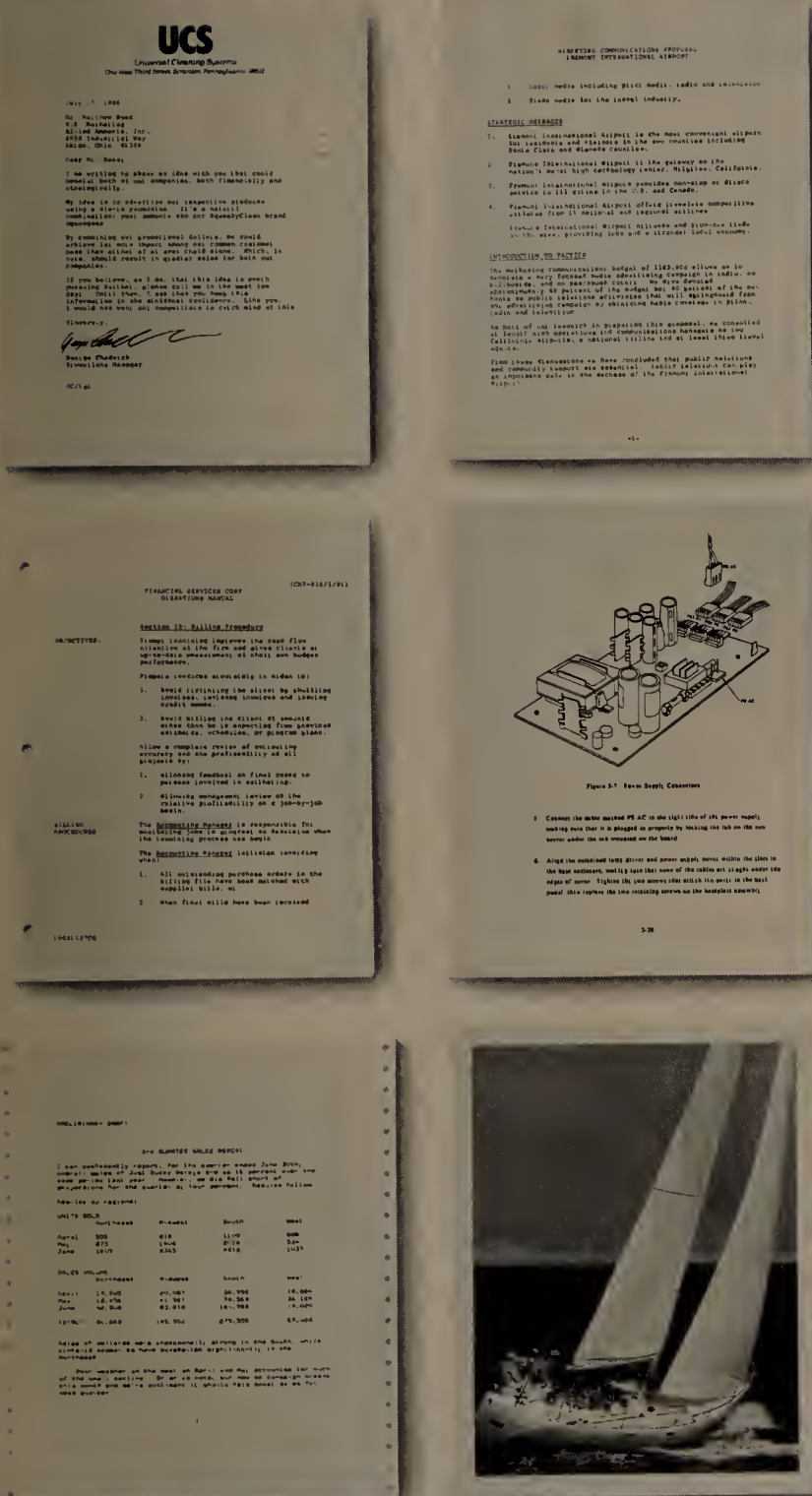
To solve this problem, we replaced line 6 of the macro—(<CursorDown> <CursorDown> <CursorDown> <End>)—with a context-sensitive search command:

< F2 > < Enter > < Enter >
< F2 >

The resulting macro searches for the break between the address and

(continues)

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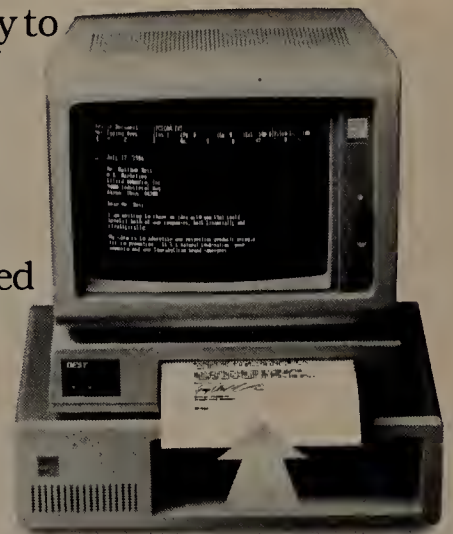
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the salutation and sends the complete address, regardless of the number of lines, to the printer.

*Bud Wood and Willis Fails
Provo, Utah*

Turbo-Charging Find and Replace

To edit just about any kind of ASCII file, I use the Turbo Pascal editor. One of its shortcomings, however, is the time it takes to perform its find and replace function. Even when the operation is automatic (that is, when the N option is specified), it is slow.

Luckily though, while attempting to type in my next command before the editor had completed a long replace operation, I discovered an undocumented feature: Following the find and replace operation with another command (even a simple <CursorDown>) causes the editor to cease displaying the changes and therefore speeds up the operation.

*Nelson Dickey
Gresham, Oregon*

Turning Clipper's Cursor On and Off

The latest version of *Clipper* [see "Clipper," *PCW*, *From the Software Shelf*, June 1987] has an undocumented way to turn the cursor on and off. To turn the cursor on, use:

call _SETCTYP with word(0)

To turn it off, use:

call _SETCTYP with word(1)

*Dan Domzalski
Buffalo Grove, Illinois*

BASIC File Saver

Whenever I'm developing a new BASIC program, I begin with the following lines:

```
1 TO 3
2 SAVE "path\filename-
.BAS":END
3 REM
```

At any time during development or debugging, I can save the current version simply by entering RUN 2. Entering RUN alone executes the program because the SAVE in line 2 is bypassed.

Because this technique is so easy, I find myself saving my programs more frequently than I used to. Plus, I've saved a multitude of keystrokes.

*Douglas Kingsley
Clayton, California*

Promptly on Time

Having seen the "Informative DOS Prompt" [*.*, *PCW*, March 1987], I had to send you the one I have installed on PCs at my office. I've included one for color and one for monochrome monitors [see Listing 1]. These commands display the current directory in the prompt, along with the date and time in the upper-right corner of the screen. The color prompt adds spice to the bland white on black; the monochrome prompt simply adds a timely touch.

*Ken Rosenzweig
Fairfax, Virginia*

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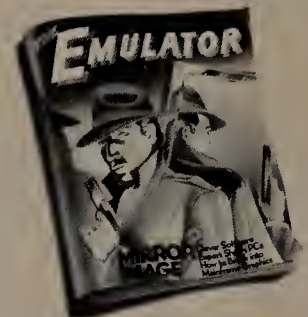
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	516,098	372,600
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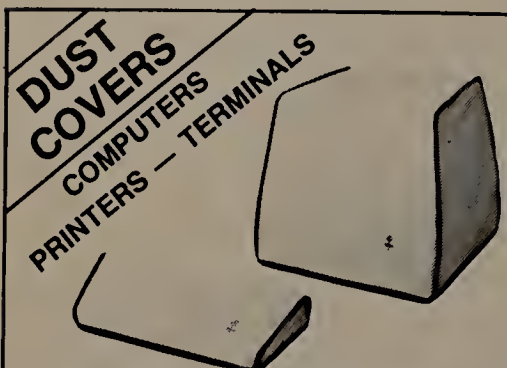
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```
PROMPT $e[Cs$e[1;33;44m$e[1;67H$d$e[2;67H$t$h$h$h$e[1;31;
40m$e[Lu$ $e[0;32;40m$g
```

```
PROMPT $e[Cs$e[1;67H$d$e[2;67H$t$h$h$h$h$e[Lu$ $g
```

Listing 1: The top PROMPT command is for color displays; the lower one, for monochrome.

```
A>RENAME F2.EXE F2
```

```
A>RENAME FL.EXE FL
```

```
A>DEBUG F2 <Enter>
```

```
-E ES:3979 <Enter>
```

```
xxxx:3979 07.0D 83.8B 3C.5C 55.08 74.83 71.3F EB.7A
```

```
xxxx:3980 B7.74 8B.6E 1C.EB D1.B4 E3.90 D1.90 E3.90 <Enter>
```

```
-W <Enter>
```

```
Writing 2D31D bytes
```

```
-N FL <Enter>
```

```
-L <Enter>
```

```
-E ES:5FDF <Enter>
```

```
xxxx:5FDF 73.2E
```

```
xxxx:5FE0 69.20 6F.34 6E.2E 20.30 34.30 2E.41 30.20 30.20 <Enter>
```

```
-W <Enter>
```

```
Writing 61B3 bytes
```

```
-Q <Enter>
```

```
A>RENAME FL FL.EXE <Enter>
```

```
A>RENAME F2 F2.EXE <Enter>
```

Figure 1: A patch to enhance the Microsoft FORTRAN Optimizing Compiler

Enhanced Optimization

The Microsoft languages department has passed along a patch that enhances the *Microsoft FORTRAN Optimizing Compiler* version 4.0. To patch the compiler, copy F2.EXE and FL.EXE to a work disk. Then copy DEBUG.COM from the DOS Supplemental Programs disk to the work disk and type the characters shown

in bold in Figure 1, pressing <Enter> only where indicated. On the lines that begin with *xxxx*, a value will appear followed by a period; after entering a new value, press the <Space> bar to move to the next byte.

(continues)



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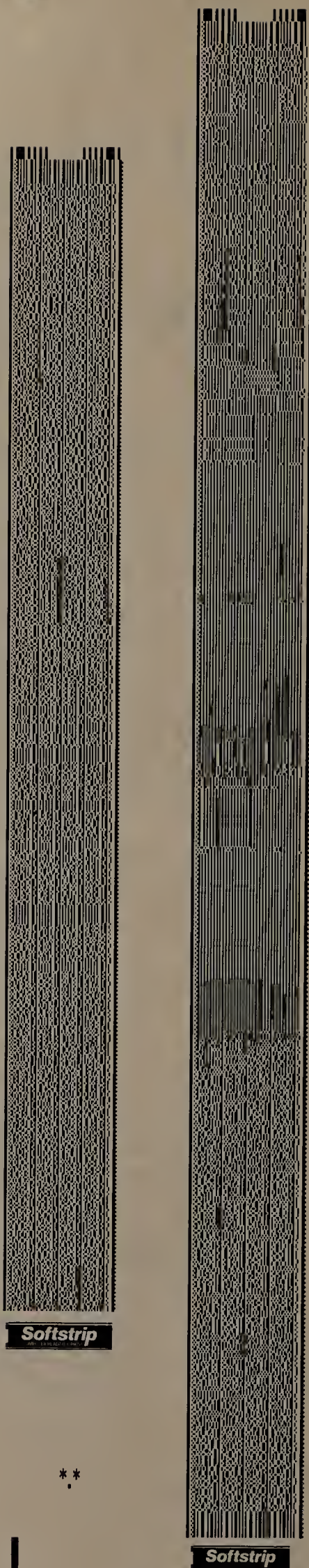
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Left: This Softstrip contains May's *.* program listings, which were unreadable due to a production error.

Right: This Softstrip contains July's *.* program listings.

. PRIMES3



Version 4.0 already optimizes code by substituting faster operations, such as multiplication, in place of slower ones, such as exponentiation. For example, rather than do an exponentiation call for $\text{SIN}(x)^2$, the compiler performs multiplication, $\text{SIN}(x) * \text{SIN}(x)$.

The enhancement, however, goes one step further. Rather than call the SIN function twice, the patch causes the compiler to store the result of the function in a temporary variable and then multiply that temporary variable by itself.

FORMATAB.BAT's KEYS.DAT

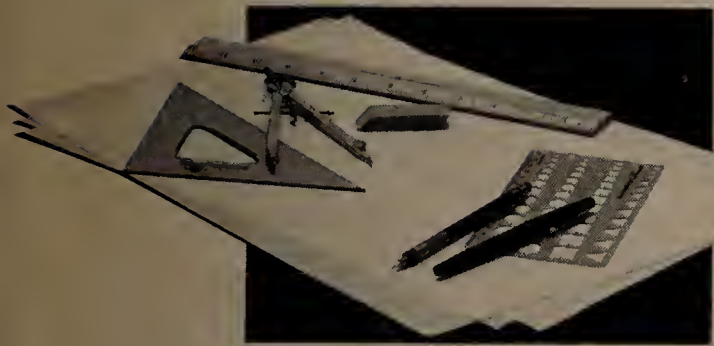
Each month I look forward to *.* and especially to the Cauzin Softstrips. They are a real time-saver. However, the Softstrip for the March file KEYS.BAS contained an error in line 110. The printed listing is correct.

James Hill
Seattle, Washington

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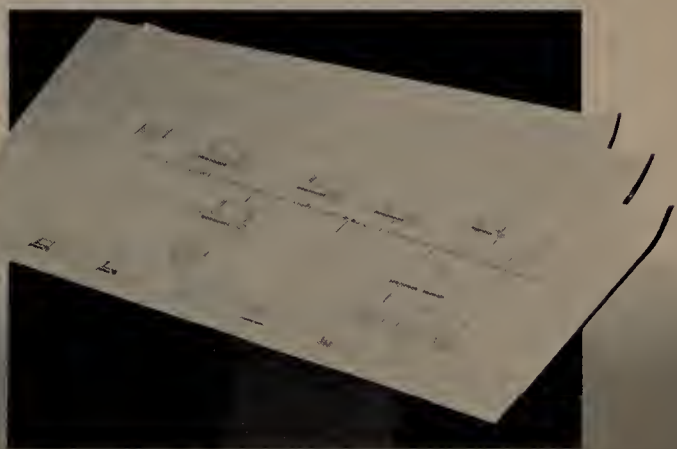
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- 411 ScanJet, Hewlett-Packard
- 412 TeleWriter II, R&S Micro Services
- 413 Thoughtline, Xpercom
- 414 Tracker, Dayflo Software
- 415 WordPerfect Executive, WordPerfect Corp.

PC World View

pages 68-72

- 416 Your Personal Poet, Computer Poet Corp.

From the Hardware Shelf

pages 133-162

- 417 30MB DriveCard, Mountain Computer, Inc.
- 418 NEC MultiSpeed, NEC Home Electronics
- 419 Tandon PCA, Tandon Corp.

Reader
Service
Number

Communications

pages 204-217

- 420 Express, Lotus Development Corp.
- 421 Knowledge Network, Applied Knowledge Groups, Inc.
- 422 PC-Talk4, Headlands Communications Corp.
- 423 Smartcom II, Hayes Microcomputer Products
- 424 TOPS, Centram Systems West

Word Processing

pages 218-227

- 425 DisplayWrite 4, IBM
- 426 Microsoft Word 3.1, Microsoft Corp.
- 427 WordPerfect 4.2, WordPerfect Corp.
- 428 XyWrite III, XyQuest, Inc.

Publishing

pages 228-231

- 429 Harvard Professional Publisher, Software Publishing Corp.

Data Management

pages 236-247

- 430 askSam, Seaside Software
- 431 Paradox, Ansa Software
- 432 pfs:professional file, Software Publishing Corp.
- 433 Q&A, Symantec Corp.

Spreadsheets

pages 248-263

- 434 PlanPerfect, WordPerfect Corp.
- 435 pfs:professional plan, Software Publishing Corp.
- 436 Silk, Daybreak Technologies
- 437 SuperCalc 4, Computer Associates International
- 438 Words & Figures, Lifetree Software

Reader
Service
Number

Graphics

pages 264-275

- 439 AutoSketch, Autodesk, Inc.
- 440 EnerGraphics, Enertronics Research
- 441 Freelance Plus, Lotus Development Corp.
- 442 Generic CADD, Generic Software, Inc.
- 443 Publisher's Paintbrush, Z-Soft

Finance

pages 278-287

- 444 Managing Your Money, Micro Education Corp. of America
- 445 Quicken, Intuit
- 446 The Equalizer, Charles Schwab & Co., Inc.
- 447 TurboTax, ChipSoft

Application Development

pages 288-291

- 448 Magic PC, Aker Corp.

Utilities

pages 292-302

- 449 Homebase, Brown Bag Software
- 450 Keyworks 3.0, Alpha Software Corp.
- 451 Pizazz, Application Techniques, Inc.
- 452 Tornado Notes, Micro Logic Corp.
- 453 XTree, Executive Systems, Inc.

The Upgrade Path

pages 305-314

- 454 AboveBoard/PC, Intel PCEO
- 455 Dots-Perfect, Dresselhaus Computer Products
- 456 Keypatch, Genest Technologies, Inc.

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Reader
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Number

- 1 ALP Systems, Inc., 54
- AST Research, Inc., 8-9
- 2 Access Micro Centers,
Inc., 332-334
- 3 Advanced Logic Research,
Inc., 55
- 4 Advanced Logic Systems, 106
- 5 Aftco, Inc., 340
- 6 Aldus Corp., 24-25
- 7 Alloy Computer Products,
Inc., 11
- 8 Amdek Corp., 124
- 9 American Small Business
Computers, Inc., 346
- 10 Amstrad, 50
- 11 Application Techniques,
Inc., 310
- 12 Archive Corp., 176
- 13 Arlington Computer
Products, 328-329
- 14 Ashton-Tate, 20-21
- 15 Ashton-Tate, 304
- 16 Autodesk, Inc., 355
- 17 BPI Systems, Inc., 19
- 18 Bay Technical Associates,
Inc., 175
- 19 Bedford Software, 141
- 20 Bible Research Systems, 126
- 21 Boeing Computer
Services, 153
- 22 Boeing Computer
Services, 155
- 23 Borland, Int'l., IFC-1
- 24 Brother Int'l. Corp., 66
- 25 Bulldog Computer
Products, 276-277

Reader
Service
Number

- 26 Bytel Corp., 114
- 27 C. Itoh Digital Products,
Inc., 52
- 28 Cabbage Cases, 340
- 29 Central Point Software, 126
- 30 Central Point Software, 162
- 31 Citizen America Corp., 13
- Compaq, 190-191
- 32 Complete PC, The, 6
- 33 CompuCover, 340
- 34 CompuServe, 65
- 35 Computer Accessories
Corp., 197
- Computer Discount
Warehouse, 330
- 36 Computer Support Corp., 64
- 37 Concentric Data Systems,
Inc., 51
- 38 Contemporary
ComputerWear, 352
- 39 Cottage Industries, 152
- 40 Crosstalk, 163
- Curtis Mfg. Co., Inc., IBC
- 41 DAC Software, Inc., 186-187
- 42 DEST Corp., 350A
- 43 Data Access Corp., 47
- 44 Data Based Solutions, Inc., 40
- 45 DayFlo Software, 89
- 46 Design Software, 146
- 47 Diconix, Inc., 143
- 48 Digital Communications
Associates, Inc., 61-63
- 49 Diskette Connection, 18
- 50 Dresselhaus, 30
- 51 Enertronics Research,
Inc., 132
- 52 Fox Software, 128
- 53 GE Computer Service, 353
- 54 General Information
Technology, 130
- 55 Generic Software, 321
- 56 Genest Technologies,
Inc., 338
- 57 Global Computer
Supplies, 352
- 58 Golden Bow Systems, 351
- 59 Grafpoint, 351
- 60 Gulfstream Micro Systems, 22
- 61 HavenTree Software Ltd., 48
- 62 Hayes Microcomputer
Products, Inc., 115-117
- 63 Hercules Computer
Technology, 164-165
- 64 Hercules Computer
Technology, 30
- 65 Hersey Micro Consulting,
Inc., 351
- 66 Hewlett Packard, 34
- 67 Hewlett Packard, 309
- 68 Houston Instrument, 28
- IBM Corp., 150-151
- 69 IDEAssociates, Inc., 319
- 70 Intel Corp., 108-109
- 71 Kaypro Corp., 111
- 72 Kea Systems Ltd., 349
- 73 Kensington, 10
- 74 Key Tronic Corp., 161
- 75 Key Tronic Corp., 173
- 76 Keystone Software Ltd., 120
- 77 Laser Connection, The, 45
- 78 Logissoft, 135-139
- 79 Logitech, Inc., 95

Reader
Service
Number

- 80 Logitech, Inc., 97
- Lotus Development
Systems, 147, 149
- Magnavox, 198
- 81 Mannesmann Tally, 195
- 82 MathSoft, Inc., 93
- Maxell Corp., 12
- 83 Merritt, 344
- Micro Logic Corp., 303
- 84 MicroCom Systems, 118
- 85 MicroWay, 112
- 86 Micrografx, Inc., 14
- 87 Microprocessors Unltd., 344
- Microsoft Corp., 90-91,
351A-351B
- 88 Migent, Inc., 313
- 89 Moneysworth, 144-145
- 90 Multi-Tech Systems, Inc., 53
- 91 NEC Information Systems,
Inc., 5
- 92 Nitro Micro, 331
- 93 North America Mica,
Inc., 152
- Oracle Corp., 16-17
- 94 Overland Data, Inc., 158
- Owl Int'l., Inc., 67
- PC Connection, 232-235
- 95 PC Mart, 326-327
- 96 PC Network, 358-359
- 97 PC Pitstop, 106
- 98 PC's Limited, 73-78
- 99 PC-SIG, 308
- 100 PCollier Systems, Inc., 49
- 101 Paperback Software Int'l., 23
- 102 Para Systems, Inc., 60
- 103 Patton & Patton, 344
- 104 Paul Mace Software, 314
- 105 Peachtree Software, 113
- 106 Peripheral Mktg., 196
- 108 Perry Computers, 92
- 109 Personal Computer Support
Group, 127
- 110 Peter Norton Computing, 131
- 111 Phoenix Phive Corp., 336
- 112 Plus Development
Corp., 342-343
- 113 Polaroid Corp., 159
- 114 Polytron Corp., 154
- 115 Quadram, 200
- Quaid Software, 142
- 116 Qubie', 119
- 117 Qume Corp., 129
- 118 Qume Corp., 315
- 119 Rightsoft, Inc., 122
- 120 SBT Corp., 56
- 121 SPSS, Inc., 100
- 122 Saba Technologies, Inc., 58-59
- 123 Safeware, 350
- Scitor, 101, 103
- 124 Seagate, 188-189

Reader
Service
Number

- 125 Secure-It, Inc., 44
- 126 Sigma Designs, Inc., 46
- 127 Silicon Express, 324
- 128 Soft/Plus Research, 350
- 129 SoftCraft, Inc., 123
- 130 SoftKlone, 26
- 131 SoftLogic Solutions, 307
- 132 Softline, 337
- 133 Softronics, Inc., 80
- 134 Software Express, 345
- 135 Software Group, The, 98-99
- 136 Software Link, The, 27
- 137 Software Link, The, 33
- Software Publishing
Corp., 31, 104-105, 107, 199
- Sony Corp., 350B
- 138 Sorbus, Inc., 160
- 139 SourceMate Information
Systems, Inc., 192
- 140 Star-Division U.S.A., 36-37
- 141 StatSoft, 148
- 142 SubLogic Corp., 29
- 143 TDA, 193
- 144 Tandon Computer Corp., 177
- 145 Telebyte Technology, 18
- Telemart, 194
- 146 3M, 81-88
- 147 Tipz, 350
- Toshiba America, Inc., 42-43
- 148 Transec, 110
- 149 Tussey Computer
Products, 156
- 150 USA-Flex, 325
- 151 Unlimited Processing, Inc., 94
- 152 Uptime, 7
- VLM Computer
Electronics, 349
- 153 Ven-Tel, BC
- 154 Verbatim Corp., 102
- 155 Video Seven, 311
- 156 Warehouse Data, 174
- 157 Wells American, 38
- 158 White Crane Systems, 44
- 159 WordPerfect Corp., 185
- 160 WordTech Systems, Inc., 125
- Worthington Data
Solutions, 96
- 161 Xidex Corp., 349
- 162 Zenith Data Systems, 39
- 163 Zenith Data Systems, 41

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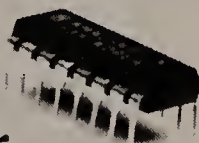
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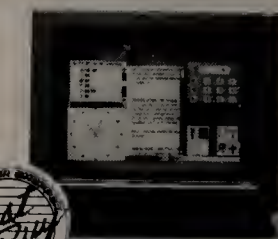
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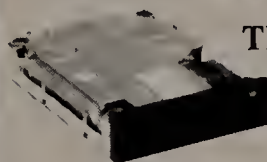
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